

Responsible Behaviours in the Outdoors

Behavioural insight into
current issues and practices



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Executive summary



Introduction

Outdoor recreation in Ireland plays a crucial role in promoting physical and mental well-being, fostering social inclusion and connection with nature, supporting environmental protection, and rural and economic development. According to the Our Lives Outdoors study, 98% of Irish adults like to spend time outdoors (CSO, 2022)¹. With such great interest and participation in outdoor recreation, it is vital that users behave responsibly. As most land in Ireland is privately owned, access to recreational users is predominantly provided through the goodwill of landowners allowing permissive access agreements; irresponsible behaviour by even a small proportion of users harms this goodwill and can lead landowners to withdraw permissive access altogether. The *Embracing Ireland's Outdoors: National Outdoor Recreation Strategy 2023-2027* emphasises the need for responsible outdoor behaviours to protect the environment, ensure continued access to recreational spaces, and promote harmony among users.

This report defines responsible behaviour as taking responsibility for one's own actions and safety, minimising one's impact on the environment and wildlife, and showing consideration to landowners and other users. The report covers three key categories of responsible behaviour: environmentally responsible behaviours (disposing of waste correctly, treating wildlife, nature, farmland, and farm animals with respect, and keeping to paths and trails where possible), dog-related responsible behaviours (disposing of dog waste correctly and keeping dogs on a lead where appropriate), and safety-related behaviours (following guidance and customs such as closing gates, preparing properly for activities and taking on appropriate levels of risk for one's experience, skills and equipment). A common thread across all three categories is the importance of showing respect for landowners' rights and requests. This report reviews current issues, existing behavioural change strategies, and campaigns, providing an evidence base to inform communications strategies, and support future policy development, infrastructure planning, and other relevant interventions to foster responsible behaviour in the outdoors.

Implementing behaviour change

As the responsible enjoyment of the outdoors is a behavioural challenge, it needs behaviourally informed solutions that take into account the psychological, social and structural barriers preventing the desired behaviour. This report helps establish a *theory of change*, which identifies the key steps required to shift behaviour, and introduces established frameworks to understand behaviours in the context of outdoor recreation, including the Theory of Planned Behaviour (Ajzen, 1991) and the COM-B model of behaviour change (Michie et al., 2011). These frameworks serve as tools for identifying barriers to responsible behaviour and establishing a strong foundation for the development of future interventions.

¹ This figure is based on a sample of 9,346 adults living in the Republic of Ireland. The Our Lives Outdoors Survey was conducted by Central Statistics Office Ireland (CSO) in May 2022.

Principles influencing responsible behaviour in the outdoors

When considering the barriers to responsible behaviours in the outdoors, a number of factors emerge as a result of the unique context of outdoor environments. This report identifies ten key overarching principles that, to varying extents, influence or hinder all environment-, dog-, and safety-related responsible behaviours in the outdoors:

1. **Solitary activities and invisible irresponsibility:** Much of outdoor recreation takes place alone or in small groups, such as families, often without encountering many other users. This limited social interaction makes it easier to ignore rules without immediate consequences or accountability.
2. **Weak and subjective social norms:** Outdoor social norms are often ambiguous and open to interpretation, leading to misunderstandings and unintentional violations of local rules, especially by visitors.
3. **The “commons dilemma” and delayed consequences:** Irresponsible outdoor behaviours can have cumulative, long-term impacts that are not immediately visible, which may lead individuals to underestimate the environmental harm caused by their actions.
4. **The intention-action gap:** Despite good intentions, practical barriers, peer influence, and situational factors often prevent individuals from acting responsibly outdoors.
5. **Gaps in awareness, misconceptions, and unintentional irresponsibility:** Visitors unfamiliar with outdoor environments often lack awareness of rules, leading to harmful behaviours out of ignorance rather than malice.
6. **Adventure mindset and perceived freedom:** The outdoors is often seen as a space for freedom and adventure, leading some (especially thrill-seekers) to overlook rules, safety, and environmental responsibilities. Both novices and experienced users can contribute to inconsistent perceptions of acceptable behaviour.
7. **Personal enjoyment and sense of entitlement:** Individuals may prioritise their own enjoyment – or their dog’s freedom – believing that nature exists primarily for their use. This mindset can foster a sense of entitlement, making users more likely to disregard safety guidelines, environmental responsibilities, and the rights or requests of landowners.
8. **Responsible tasks are unappealing and restrictive:** Responsible behaviours, like picking up litter or leashing dogs, are often seen as burdensome and incompatible with the sense of freedom sought in nature.
9. **Lack of clear and consistent information:** Inconsistent or unclear signage, combined with unfamiliarity with private land ownership, makes it challenging for visitors to navigate the outdoors responsibly.
10. **Limited regulation and weak enforcement:** The outdoors feels less regulated, with weak enforcement of rules, leading individuals to rely on personal ethics, which can fall short in ensuring responsible behaviours.

Overarching recommendations & strategies

This report also identifies overarching strategies: guiding principles for implementing behaviour change across the various behavioural challenges by **encouraging, enabling, or enforcing** responsible behaviour. Their application to each environment-, dog-, and safety-related responsible behavioural challenge is detailed in the respective sections.

ENCOURAGE

- **Inform and educate:** Provide clear, accessible information about responsible behaviour, why it matters, and how to act responsibly, while addressing uninformed or careless behaviours through education.
- **Persuade:** Design theory-based, context-appropriate, and positively framed messages that highlight personal benefits and use emotional or humorous tones to motivate behaviour change.
- **Increase the visibility of irresponsible behaviours and their consequences:** Use social norms and symbolic cues, like images of watching eyes, to make behaviours and their accountability more visible and reinforce social proof.
- **Personalise and humanise messages and signs:** Create empathy and emotional connections by sharing personal stories, anthropomorphising wildlife, or showing how actions affect specific individuals or animals.
- **Make nature feel familiar by drawing relatable comparisons:** Draw relatable comparisons, such as framing farms as workplaces, to foster respect and responsibility.
- **Appeal to positive emotions:** Inspire intrinsic motivation for responsible actions by evoking emotions like joy, awe, and pride in protecting nature's beauty and community benefits.

ENABLE

- **Promote planning ahead:** Help visitors prepare for responsible and safe behaviour by providing tools like checklists or pledges, reinforcing intentions with practical reminders.
- **Make the responsible behaviour easier and more attractive:** Reduce friction and enhance appeal by implementing convenient solutions, such as accessible bins or practical waste-carrying tools.
- **Model the desired behaviour:** Engage responsible users, outdoor activity operators and landowners as role models to educate others, fostering dialogue, positive social norms, and a sense of inclusion in responsible outdoor communities.
- **Change the choice architecture:** Restructure environments and decision-making processes to nudge individuals toward responsible actions, making these behaviours the default and easiest choice.

ENFORCE

- **Implement and enforce regulation:** Establish and enforce clear rules to set behavioural standards, reduce ambiguity, and ensure compliance, especially for those less intrinsically motivated to act responsibly. Effective enforcement should be clearly communicated and visibly endorsed by trusted local voices such as landowners, authorities, and community groups to build legitimacy, encourage compliance, and maintain public trust.

Responsible behaviours in the outdoors

The report covers three key categories of responsible behaviour: environmentally responsible behaviour, dog-related responsible behaviour, and safety-related behaviour, as determined through a review of academic and grey literature and stakeholder discussions with Sport Ireland and the Comhairle na Tuaithe Responsible Behaviour sub-group. All behaviours are guided by a fundamental respect for landowners, other recreational users, nature, and wildlife. While respect itself is not a behaviour, it serves as the underlying principle driving all of these actions.

The below tables present the key barriers hindering each responsible behaviour, as well as a summary overview of the recommendations. These are detailed with specific examples in the main body of this document.

ENVIRONMENT-RELATED RESPONSIBLE BEHAVIOURS

Behaviour	Key barriers	Recommendations
Disposing of waste correctly	• Lack of awareness of environmental harm • Littering is the easy option • Limited or unattractive bin availability • Negative social norms encourage littering • In-group pressure to litter • Lack of motivation to pick up litter • Misconception about biodegradables	• Highlight the serious environmental impacts of littering • Encourage people to prepare by bringing reusable containers and reducing waste • Where feasible, provide bins in appropriate and strategic locations such as carparks or main access points, with signs drawing attention to them • Where providing bins is not feasible or advisable (e.g. along trails where wildlife or farm animals may scatter waste), communicate this clearly to users, explaining the reasoning and encouraging them to take all waste home with them • Ensure signage is salient and easily understood, including translation or visual cues • Use human interventions like volunteer rangers modelling responsible behaviour or verbally encouraging litter pickup • Maintain the attractiveness of outdoor environments, as cleaner spaces encourage users not to litter

Treating wildlife, nature, farmland, and farm animals with respect	• Wildlife or farm animals not being visible to visitors, leading to reduced awareness or misconceptions about its presence • Lack of awareness of harm to wildlife, nature, farmland, and farm animals, including harms that may not be obvious (e.g. elevated stress hormones etc.) • Difficulty judging safe distance from wildlife and farm animals • Desire to capture photos or videos of wildlife and farm animals • Influence of observing harmful behaviour of other users	• Personalise wildlife and farm animals by using anthropomorphism to increase empathy and concern for their well-being • Provide clear, simple messages to correct misconceptions about harm to wildlife and farm animals • Clearly highlight actions that can harm wildlife or farm animals – such as getting too close to take photos–, and explain how to do them responsibly, if at all • Make responsible behaviours easier to follow by providing perceptible cues, like using bus-length distances for wildlife interaction • Make visitors aware of actions prohibited by legislation – for example, that it is illegal to photograph or disturb a bird on or near their nest without first obtaining a licence from the National Parks and Wildlife Service (NPWS) • Clearly mark protected areas, such as the 1,222 protected sites across Ireland, including 618 designated under national law and 604 Natura 2000 sites, and use these designations to emphasise the importance of responsible behaviour • Appeal to humans' emotional connection with wildlife and farm animals to encourage respectful treatment • Highlight personal benefits of preserving nature for future appreciation and use • Highlight negative consequences of irresponsible behaviour to grab attention, but avoid creating descriptive norms that make the undesirable behaviour appear to be common
Keeping to paths and trails where possible	• Limited pro-environmental, or conservation values • Social proof from observing others off-trail • Desire for freedom and exploration • Poorly maintained trails or lack of satisfaction with infrastructure • Lack of awareness or misunderstanding of environmental impact • Ineffective or absent enforcement	• Place interventions directly at decision points, such as trail intersections • Use subtle environmental nudges like low barriers or natural obstacles • Assess whether off-trail behaviour is intentional or accidental to tailor interventions effectively • Provide accessible and timely educational resources and reminders (e.g. through apps) • Use positively framed, injunctive messages highlighting conservation goals • Ensure designated trails are well-maintained, clearly marked, and enjoyable • Connect visitors personally to the local environment, fostering stewardship by framing ecosystems as "homes" to protect • Use cultural references or storytelling to make desired behaviours more engaging • Encourage pre-trip planning through digital tools • Provide accessible and timely messaging that refer to current considerations for users (such as during lambing season, or when there are poor ground conditions) with a view to integrating reminders based on live data and location using apps and other digital tools in the future

DOG-RELATED RESPONSIBLE BEHAVIOURS

Behaviour	Barriers	Recommendations
Disposing of dog waste correctly	• Belief that it is not always practical to pick up dog waste • Turning a blind eye (e.g., looking away, "forgetfulness") • Low responsibility in natural or low-footfall areas • Lack of bins or poor bin placement • Reluctance to carry waste home or in cars • Lack of visibility and social norms • Limited fear of fines or confrontation	• Use signage near bins and always include the option to carry waste home when bins are not available • Use footprints or animal tracks to guide dog owners to bins • In areas without bins, clearly acknowledge the absence and encourage dog owners to carry waste home • Frame carrying dog waste as a "team effort" by involving the dog such as attaching the waste to their harness • Encourage responsible behaviour with strategies like attaching dog waste to windshield wipers and using stickers like "#ProudToScoop" to foster pride in ownership • Tap into the "watching eyes effect" by reminding dog owners that wildlife is observing their actions • Frame responsible behaviour positively, making it something to be proud of for both owners and their dogs • Use first-person messaging from wildlife and farm animals about risk to their health from dog waste to create a personal connection and highlight the impact of dog fouling

Keeping dogs on a lead	• Belief that dogs are happier off-lead • Overconfidence in control or recall abilities, optimism bias • Social norms encouraging off-lead walking • Perception that rules don't apply • Off-lead walking seen as normal in some areas • Desire for social interaction with other dog owners • Perception of safe or secluded areas promotes roaming • Lack of clear signage or enforcement • Lack of respect for landowners and their livelihoods • Lack of concern for risk to animal welfare	• Explain the reasons behind dog-related rules (e.g., dangers to farm animals and wildlife) rather than simply stating restrictions using vivid visual cues • Use direct and clear language in messaging to avoid misinterpretation about when to keep dogs on a lead • Set up a photo station at trailheads to encourage responsible behaviour by letting dog owners engage with the message while taking pictures of their dogs • Build respect for farmers by sharing personal stories or testimonials about how loose dogs affect their livelihood and animals • Personalise messaging with (imaginary) farmers' stories and sheep to humanise the issue • Use humor, like "I promise to keep my human on a lead!" to showcase responsibility in a fun way • Reframe land as a workplace, e.g. by comparing loose dogs on farms to vandalising an office • Use analogies (e.g. comparing leashing dogs to wearing a seatbelt) to normalise responsible behaviour as a simple precautionary measure • Acknowledge owners' feelings about their dogs being "special" while reinforcing that all dogs can stress farm animals and wildlife, especially sheep and nesting birds, creating a more receptive message • Strengthen enforcement of fines for disturbing farm animals, framing them as both a deterrent and an educational opportunity for dog owners
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SAFETY-RELATED RESPONSIBLE BEHAVIOURS

Behaviour	Barriers	Recommendations
Taking precautions to manage risk	• Being unaware risks that are posed by various actions and activities. • Poorly designed warning signs failing to convey hazards effectively • Overconfidence from past successes or novice underestimation of risks • Optimism bias that justifies insufficient preparation • Possessing the requisite skills for the activity being performed • Having the appropriate resources (i.e. gear) for the activity being performed • Social influences which may causing disregard of risks • Desire for recognition from peers, in real life and on social media • Thrill and sensation-seeking for excitement and achievement • Preference for personal freedom over adhering to guidelines	• Clearly communicate potential risks so they are salient to outdoor users, both before and during the activity • Make users aware that ultimately they are responsible for their own safety • Encourage users to develop their skills to increase their safety whilst taking part in outdoor recreation • Provide visitors with real-time weather and terrain information through digital resources (e.g. Get Ireland Active website) • Develop interactive safety tools in mobile apps, like quizzes on weather conditions and terrain challenges, to engage visitors in assessing their own risks before outdoor activities • Inform and remind users what gear they should bring with them. Doing this before they leave home and before they commence an activity will enable them to prepare appropriately, or avoid it altogether • Encourage recreational users to acquire sufficient skills to perform activities safely, make doing so as accessible as possible • Highlight the consequences of unsafe behaviour and emphasise the frequency of adverse outcomes (for example, using injury statistics), paired with visuals to emotionally appeal to visitors • Use behaviourally-informed messaging to counteract the potential negative influence of biases, for example, targeting people's optimism and exceptionalism biases • Implement social norms messaging to dispel misconceptions of other users' level of comfort taking on risk, and of the level of risk that is common for users to take on; people often overestimate this due to a phenomenon called pluralistic ignorance • Apply social norm messaging that frames responsible outdoor behavior as a mark of competence • Empower experienced users to model responsible outdoor behaviour and engage with less experienced visitors • Design physical and visual barriers, to subtly guide visitors away from dangerous areas, introduce strategically positioned photo zones • Implement financial deterrents like fines for certain risky actions such as cliff jumping.

Introduction



Outdoor recreation is highly valued by both the population of Ireland and tourists. Spending time outdoors offers benefits such as improved physical and mental health, social inclusion, connection with nature, community cohesion, environmental protection, and rural and economic development (*Embracing Ireland's Outdoors: National Outdoor Recreation Strategy 2023-2027*). While according to the Our Lives Outdoors study, 98% of survey respondents enjoy spending time outdoors and recreational walking is at its highest level ever (CSO, 2022) some users neglect their safety, their impact on the natural environment and wildlife, and show little consideration for landowners and other users. The COVID-19 pandemic significantly increased the popularity of outdoor recreation, with most Irish adults spending more time outdoors than before the pandemic. This increase in outdoor activity has also led to a rise in irresponsible behaviour, highlighting the urgent need to promote responsible behaviour among all outdoor users to ensure the sustainability and enjoyment of these activities for everyone.

Outdoor recreation refers to activities that take place in the natural environment, such as walking, canoeing, mountain biking, orienteering and wild swimming. *Embracing Ireland's Outdoors: National Outdoor Recreation Strategy 2023-2027* excludes from this term activities that take place on confined courses or pitches (such as golf, football, show jumping) or motorised activities (such as quads/scramblers) with the exception of motorised mobility aids. While some of the insights and recommendations in this report are relevant to water- and air-based outdoor recreational activities, it primarily focuses on the most common land-based outdoor activities, namely walking and hiking.

This report reviews current issues, existing behavioural change strategies, and campaigns, providing an evidence-base to inform communication strategies to foster responsible behaviour in the outdoors and support future policy development, infrastructure planning, and other relevant areas during implementation. For the purposes of this report, responsible behaviour is defined as taking responsibility for one's own actions and safety, minimising one's impact on the environment and wildlife, and showing consideration to landowners and other users. The report covers three key categories of responsible behaviour: environmentally responsible behaviour (disposing of waste correctly, treating wildlife, nature, farmland, and farm animals with respect, and keeping to paths and trails where possible), dog-related responsible behaviour (disposing of dog waste correctly and keeping dogs on a lead at appropriate times), and safety-related behaviour (taking precautions to manage risks). These behaviours and the focus of the report were determined through a review of academic and grey literature and stakeholder discussions with Sport Ireland and the Comhairle na Tuaithe Responsible Behaviour sub-group.

The unique context of outdoor recreation in Ireland

Discussing responsible outdoor behaviours in Ireland requires understanding the unique context and cultural significance of Irish land, much of which is privately owned. In Ireland, recreational users have no legal right to access private land; instead, access can be granted as an act of goodwill by landowners. Currently, there is limited awareness or understanding of private land ownership among casual recreationalists, which contributes to unintentional irresponsible behaviour. In addition, there are some recreational users who simply show a lack of respect or concern for landowners' rules and for the serious impacts their actions can have on landowners. Incidences of irresponsible behaviour can cause serious issues for landowners, including threatening their livelihoods. It is imperative to ensure the grievances of landowners are being addressed, and instances of irresponsible behaviour are reduced, so that future generations can continue to enjoy access to the outdoors. This report contributes to efforts to change user behaviour so that all users are fully aware of their personal responsibilities and enjoy access in a respectful manner.

Most land used for outdoor recreation in Ireland is accessed through the goodwill of landowners, who allow what is known as ‘permissive access’. While many of these areas are used without formal agreements in place, this access is rarely the result of active refusal; rather, landowners are often not formally approached, or their land may not be suitable or desirable for recreation. Comhairle na Tuaithe is working to protect and enhance existing access arrangements and to support their expansion. However, landowners have expressed growing concern over irresponsible behaviours that pose risks to the environment, the safety of their animals, and their livelihoods.

Most land used for outdoor recreation in Ireland is accessed through the goodwill of landowners, who grant what is known as ‘permissive access’ to recreational users. While many other areas are also used – without formal access agreements –, this is rarely the result of active refusal; rather, landowners have often not been formally approached yet, or their land may not be suitable or desirable for recreation. Comhairle na Tuaithe is actively working with landowners to protect and enhance existing access arrangements and to support their expansion. Landowners however, have increasingly expressed concern over irresponsible behaviours that pose risks to the environment, the safety of their farm animals, and their livelihoods. From minor infractions such as straying from designated trails to more severe cases like dogs chasing sheep, which can cause miscarriages, irresponsible behaviour is jeopardising access to the outdoors. Some landowners have recently withdrawn permissive access to their land, demonstrating that irresponsible behaviour threatens not only the environment and landowners’ livelihoods but also the public’s continued access to outdoor spaces. Improving recreational users’ behaviour is therefore crucial to maintaining access to Ireland’s outdoor areas and ensuring outdoor recreation continues to thrive.

The strategic context and approach of this report

Embracing Ireland’s Outdoors: National Outdoor Recreation Strategy 2023-2027 presents six strategic objectives, namely: Awareness, Leadership, Opportunities, Expertise, Access and Environment. This report relates primarily to the objectives of Awareness and Access: it aims to 1) raise awareness about how to enjoy the outdoors respectfully and be aware of personal responsibilities, and 2) to promote behaviour change, ensuring that when people access the outdoors they do so with respect to other users and the environment.

The report takes a behavioural approach, which uses insights from behavioural science – an interdisciplinary field that combines psychology, economics, sociology, and other disciplines – to understand how people behave and why. This involves identifying the psychological, social, and structural barriers – such as habits, biases, motivations, or contextual challenges – that stand in the way of change. The report systematically draws on these insights to design practical and evidence-based interventions. Building on this analysis, it also identifies cost-effective communication campaigns and other strategies that encourage responsible behaviour outdoors by reducing barriers and tapping into positive values and motivations.

This report is structured as follows. Section 1 introduces actionable frameworks to help understand the factors driving specific behaviours and guide practitioners in identifying effective behavioural change strategies. Section 2 explores overarching themes and challenges related to outdoor behaviours and presents an overview of high-level strategies identified through the synthesis of recommendations. The report categorises behaviours into three macro areas: Section 3 covers environment-related responsible behaviours, Section 4 discusses dog-related responsible behaviours, and Section 5 examines safety-related responsible behaviours. For each category of behaviours, the report identifies barriers, draws on case studies showcasing the effectiveness of past interventions, and recommends strategies to encourage responsible behaviours, with a focus on communications and signage. Section 6 concludes by synthesising the evidence base and providing a summary of actionable recommendations for all the responsible behaviours discussed.

Overview of current and previous efforts to promote responsible behaviours in the Irish outdoors

Efforts to promote responsible outdoor behaviour in Ireland have evolved significantly over the past two decades. In 2004, Comhairle na Tuaithe was established as a collaborative body comprising representatives from farming organisations, recreational users, state agencies, and with the Department of Rural and Community Development acting as secretariat. Its initial task was to address key countryside issues, including access, the development of a countryside code, and a national countryside recreation strategy. In 2019, Comhairle na Tuaithe was given a new mandate to strengthen its advisory role to the Minister for Rural and Community Development on the sustainable development of outdoor recreation in Ireland, particularly in the open countryside.

While this report is the first piece of work taking a behavioural insights approach commissioned on behalf of the entire Comhairle na Tuaithe to support the development of a national communications campaign on responsible outdoor behaviour, several member organisations have, over the years, developed their own educational resources, awareness campaigns, and signage to promote responsible conduct among outdoor recreationists. This report aims to draw on these experiences – both in Ireland and internationally – to identify strengths, weaknesses, and key learnings and to build an evidence base grounded in behavioural insights. The following section highlights a selection of past and ongoing efforts, while also recognising that many other organisations, local authorities and community groups have also developed and continue to develop valuable resources and campaigns.

The ‘Leave No Trace’ programme and the ‘Love This Place’ campaign

Leave No Trace Ireland

Leave No Trace (LNT) is a charitable organisation, founded in the United States in 1994, with the goal to promote environmentally responsible behaviour amongst outdoor recreationists through an education-based approach, captured by the following seven principles: ‘Plan Ahead and Prepare’, ‘Be Considerate of Others’, ‘Respect Farm Animals and Wildlife’, ‘Travel and Camp Responsibly’, ‘Leave What You Find’, ‘Dispose of Waste Properly’, and ‘Protect Nature From Fire’.

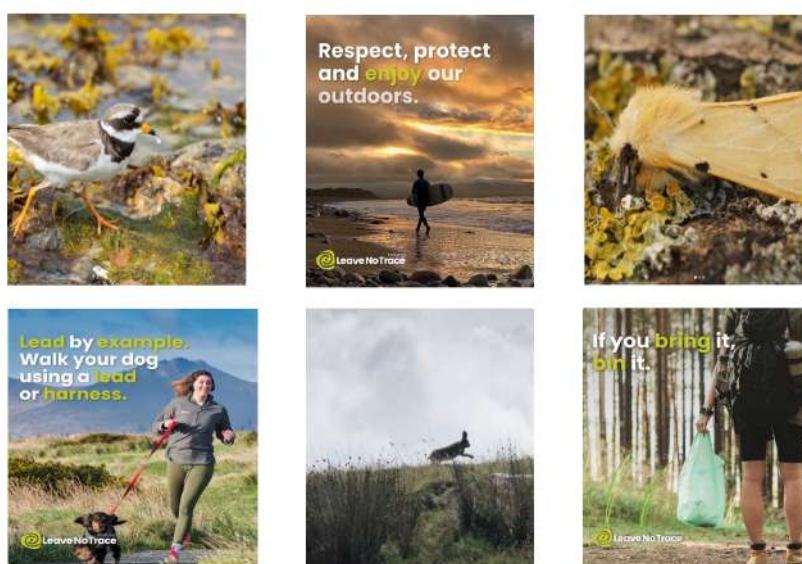
After several years of groundwork by multiple organisations, Leave No Trace Ireland was officially launched in 2008, to provide a comprehensive framework for promoting responsible outdoor ethics. Today, it operates across all 32 counties, delivering an extensive nationwide programme in partnership with stakeholders, schools, relevant government departments, community and charitable organisations and corporates to raise awareness of responsible outdoor recreation.

In June 2021, Leave No Trace Ireland launched the *Love This Place, Leave No Trace* campaign, which has been refined annually. The 2024 campaign focused on five key behaviours: ‘Keep Ireland litter-free’, ‘Protect our wildlife’, ‘Stick to the path to protect our land and coast’, ‘Be responsible with our dogs’, and ‘Embrace our island and cultural heritage’. The campaign used platforms such as Instagram, TikTok, and Facebook, collaborating with micro-influencers to share visual content, including videos. It also introduced ‘Love This Place Day’ on July 28th, which mobilised 180 people to take part in community activities such as litter picking.

In total, the campaign received nearly 2 million video views and over 1.9 million impressions across Leave No Trace Ireland’s social media channels, not including the reach from partner shares. Among 1,058 adults surveyed, 32% recalled recent messaging from Leave No Trace Ireland about responsible outdoor behaviour. Notably, recall was highest among 16-24 year-olds at 39%, a positive outcome given this group was a key target due to research showing they are more likely to misunderstand appropriate outdoor behaviour.

Much of the 'Love This Place' campaign communications align closely with insights from behavioural science literature. For example, asking website visitors to 'Take the Love This Place promise' and to share it on social media utilises a commitment device technique and aims to harness peer effects. Furthermore, by promoting a few key responsible behaviours which can be described simply – for example, 'Keep Ireland clean', 'Respect signage', 'Consider your impact', and 'Be a responsible dog owner' – recreationists are not overloaded with information and responsible behaviour is seen as feasible.

The use of such techniques and simple messages shows strong potential to translate good intentions into action, and metrics like reach and message recall indicate the campaign's meaningful engagement, particularly among target audiences. However, as with most digital campaigns, there are limitations in assessing real-world behavioural change. To build on this promising foundation, further resources and research are needed to evaluate on-the-ground impact and to expand the campaign through complementary interventions, such as timely signage and infrastructure, that can help 'enable' or 'enforce' responsible behaviours in outdoor settings.



No Dogs Allowed Irish Farmers' Association

The Irish Farmers' Association (IFA) is Ireland's largest farming representative organisation, protecting and defending the interests of Irish farmers for over the past 70 years.

In 2021, the rise in the number of dog-related incidents prompted the IFA to launch the 'No Dogs Allowed' campaign, which has been running since. The campaign mostly includes basic signage in fields where farm animals are present that contain the phrase with a prohibition graphic. The 2025 campaign was launched by the President of the IFA in February (the commencement of lambing season) with a series of interviews to raise awareness for the issue of dog attacks on sheep, in particular (Irish Farmers Journal, 2025).

To raise further awareness to the problem, in 2021, the Department for Agriculture, Food and the Marine re-launched the 'Bonzo wants to go out' advert, originally broadcast in 1984. This short cartoon video depicts the harm that seemingly innocent pet dogs can cause in terms of worrying sheep.

Despite these campaigns, unfortunately, the incidents of dog attacks on sheep have continued to rise and nor has there been an improvement in payment for fines for out-of-control dogs. This may be in part due to an increase in the number of dogs and recreational users, however it may also be attributed to the lack of explanation or reasoning ‘No Dogs Allowed’ signs provide. Further determinants of behaviour change – such as perceived behavioural control, the presence of social norms, capability or motivation – may also contribute to owners ignoring the signage.



“The Mountains Thank You For...” and RESPECT **Mountaineering Ireland**

Mountaineering Ireland is Ireland’s National Governing Body for hillwalking and climbing. Its work includes promoting responsible participation, improving access, protecting the environment, supporting skills development and training, and influencing relevant policy.

In 2022, Mountaineering Ireland created graphics based on the phrase: ‘The Mountains Thank You For...’. These indicated different responsible behaviours that mountain users should perform, including ‘leaving your dog at home’, ‘leaving no litter’, and ‘preventing erosion’. The infographic also contains more information on the actions that make up that responsible behaviour. For example, ‘leaving no litter’ requires ‘carrying a bag to take home your rubbish’ and ‘picking up litter that you come across.’

The Mountains Thank You For... succeeded Mountaineering Ireland’s previous communications - RESPECT - an acronym for ‘Responsible Enjoyment of Special Places with Empathy, Care, and Trust’. This series of infographics highlighted various responsible behaviours and how to perform them. For example, the infographic on ‘controlling your canine companion’ urges users to ‘respect and be aware of farm animals and wildlife’, ‘observe and respect local signage’, ‘take responsibility for your dog’s waste’ and ‘share this advice with others’.

While campaigns like *“Love This Place”* and *“No Dogs Allowed”* may have had limited impact on actual behaviour change due to overly simplistic messages, the more informative approach of ‘The Mountains Thank You For...’ and ‘RESPECT’ present the risk that the volume of information could dilute message clarity and reduce memorability. Nonetheless, these campaigns successfully evoke a sense of reciprocity – a powerful behavioural principle – by framing responsible actions as ways to give back to the landscape, which can help foster stronger emotional and moral engagement.



Get Ireland Active Sport Ireland

The Get Ireland Active National Database is Ireland's interactive activity, sport and recreation hub. It is a central registry bringing together the collective resources of the Government, Sport Ireland, local authorities, state agencies, and the national governing bodies of sport to capture all sports facilities and places for people to be active in Ireland. The database is accessed through an easy-to-use, interactive website. The website contains features which can enable users to plan ahead and prepare to behave responsibly. For example, it has an interactive map which allows users to filter trails and waterways based on their preferences, such as difficulty level and whether dogs are permitted. On its own, the Get Ireland Active website will likely reach a subset of outdoor recreationists who actively plan ahead. It is a useful complement to other strategies to encourage responsible behaviour.

1.1 Implementing behaviour change – a practical guide

The responsible enjoyment of the outdoors is a behavioural challenge and therefore needs behaviourally-informed solutions. By understanding the underlying factors that drive or hinder specific behaviours, we can identify targeted strategies to effectively change them. This section provides a practical guide, grounded in theory and supported by useful frameworks, to help implement behavioural change among outdoor recreation users. These insights can be useful for various purposes, including intervention development, policy design, infrastructure planning, and other relevant efforts, ensuring that responsible behaviours are encouraged in an effective and sustainable way.

1. What is the desired behaviour?

To define the desired behaviour and the ultimate outcome, it is helpful to develop a “theory of change” – a way of mapping out the necessary steps that need to happen for a behaviour change to occur. We will then work our way backwards to identify the elements that need to change to reach the desired outcome.



1) Begin by defining the ultimate goal the behavioural intervention aims to achieve. For example, the desired outcome might be to halt the ground erosion in a specific area.

2) Then, break down the ultimate goal into specific desired behaviours. In other words, list the behaviour(s) that will allow you to reach that outcome. For example, one of the desired behaviours might be ensuring recreational users stay on designated trails.

3) Make your desired behaviour(s) as specific as possible. Taking the time to clearly articulate these behaviours is a critical step in designing a successful behaviour change strategy, as it provides a clear target for both intervention and measurement.

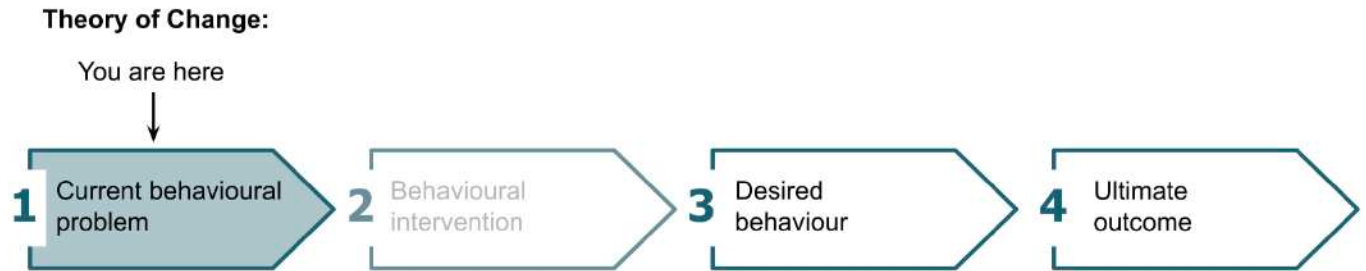
This report focuses on the following six desired responsible behaviours:

Category	Who needs to take action?	Why do things need to change?	What does the target group need to do?	When and where do they need to do it?
Environment-related	All users of the outdoors	To prevent pollution, protect wildlife, and maintain the natural beauty of the area	Carry all waste out of the area and dispose of it properly	At all times while in outdoor areas
	All users of the outdoors	To avoid disturbing ecosystems, harming wildlife, or damaging sensitive habitats	Observe wildlife from a distance, avoid feeding animals, and refrain from picking flowers or damaging plants	In areas with wildlife, especially during nesting or breeding seasons
	All users of the outdoors (particularly hikers, bikers, event runners, and off-road enthusiasts)	To prevent erosion, protect fragile ecosystems, and reduce the risk of accidents	Keep to paths and trails where possible	In all outdoor areas, especially on privately-owned land and during bad weather conditions
Dog-related	Dog owners	To avoid disturbing ecosystems, maintain hygiene and avoid spreading disease, and protect water sources from contamination	Carry waste bags and dispose of dog waste in designated bins or at home	Whenever walking, running, or cycling with dogs
	Dog owners	To prevent harm to wildlife, farm animals and the dog itself, avoid disturbing other visitors	Keep dogs on a leash and under control, especially in areas with wildlife and farm animals	Whenever walking dogs, but especially in in wildlife-sensitive areas or during nesting and lambing season
Safety-related	All users of the outdoors	To reduce the possibility of suffering from accidents or injury from participating in outdoor recreation	Take precautions to manage risk and avoid performing actions where risk cannot be mitigated	At all times while in outdoor areas

These behaviours are guided by a fundamental respect for landowners, other recreational users, nature, and wildlife. While respect itself is not a behaviour, it serves as the underlying principle driving all of these actions.

2. What is justifying the current behaviour, and what are the key barriers?

Before implementing behaviour change programmes or encouraging recreational users to adopt preferred behaviours, it is essential to understand the existing barriers that justify current behaviours. These barriers can be conceptualised and predicted using frameworks based on insights from studies of behaviour change across various contexts. These frameworks can then inform the development of behaviour change interventions and help researchers and practitioners understand the influences on human behaviour.



Theory of Planned Behaviour (Ajzen, 1991) and Doyle's framework (Doyle, 2020)

Historically, the Theory of Planned Behaviour (Ajzen, 1991) has been most widely applied to the context of responsible behaviour in the outdoors. The theory states that the **intention to perform a behaviour** is determined by a person's **attitude** towards that behaviour, **subjective norms**, and their **perceived behavioural control**; three factors that dynamically influence each other.

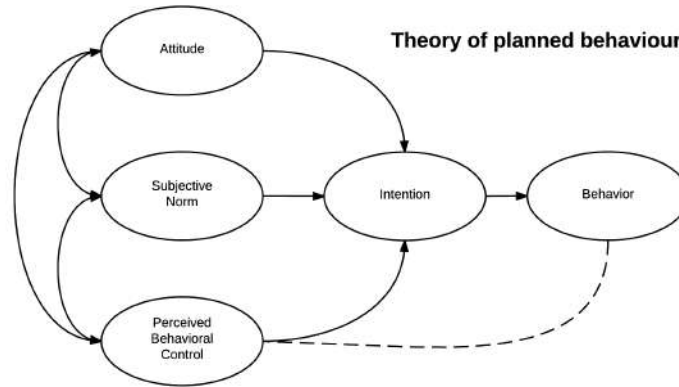
Attitude refers to how 'favourable or unfavourable' one perceives the behaviour to be; if a person thinks a behaviour is worthwhile then their intention to perform it will be higher. It is generally agreed that attitudes stem from beliefs about that behaviour; if a person associates a behaviour with having positive consequences, they will have a positive attitude towards it, and vice versa.

Subjective norms (also referred to as social norms) refer to the 'perceived social pressure to perform or not perform the behaviour'. Subjective norms are stronger when a person believes their behaviour will be observed by others as the perceived negative social repercussions of not conforming to the (approved) behaviour of others is much weaker if they are not being observed.

Lastly, perceived behavioural control (PBC) refers to a person's perception of how easy or difficult it will be to perform a certain behaviour. This is an important factor in determining behavioural intention because the easier a person thinks a behaviour will be, the more likely they are to commit to it. Furthermore, if a person's PBC is 'realistic', it can be used to predict the likelihood of a successful behavioural attempt. In other words, if they are correct in thinking that a behaviour will be easy to perform (meaning it is indeed easy to perform) then it is more likely that their intention will successfully translate into action.

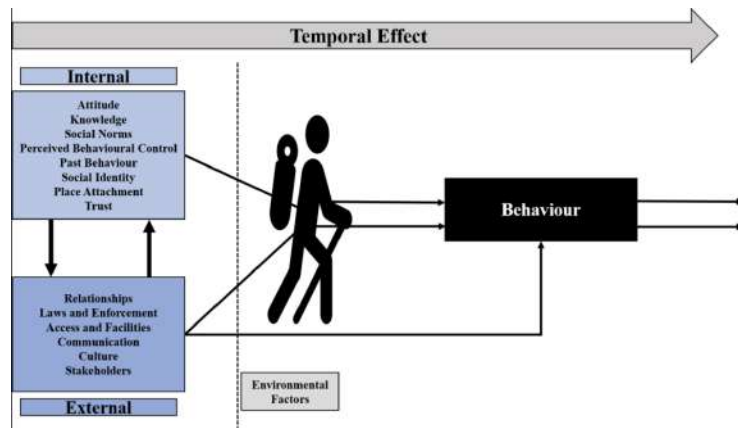
As its name suggests, the Theory of Planned Behaviour (TPB) describes the factors that influence 'planned behaviour', not actual behaviour. Although on the whole the stronger a person's behavioural intention is the more likely they are to perform that behaviour, intentions often do not lead to actual behaviour: a phenomenon known as the intention-behaviour gap.

The intention-action gap is particularly pertinent to responsible behaviours in the outdoors. It is considerably more difficult for researchers to measure a person's actual behaviour in the outdoors compared to surveying their intentions. This may partly explain why so many studies (using TPB) focus solely on intentions. Due to the pervasive intention-behaviour gap, applying TPB only solves the first half of the challenge; it does not address the crucial second half of the behaviour change process, which entails translating intentions into actions.



Theory of Planned Behaviour (Ajzen, 1991)

Doyle (2020) extends TPB to explicitly focus on behaviour change in the context of outdoor recreation in Ireland. Developed in collaboration with Leave No Trace Ireland, Doyle's framework incorporates additional **internal factors** (e.g., social identity, place attachment, trust, and past behaviour), **external factors** (e.g., laws, access, facilities, and communication) and **temporal effects** to address the complexity of human behaviour. The TPB does not provide a comprehensive approach to designing interventions for responsible outdoor behaviour, as it does not explain why behavioural intention often does not translate into actual behaviour. A more comprehensive approach can be achieved by including external factors that account for the disparity between intention and action.



Doyle's Theoretical framework illustrating the factors required to foster environmentally responsible behaviour (Doyle, 2020)

COM-B (Michie et al., 2011)

Another systematic approach to identify barriers unique to a desired behaviour is the COM-B framework (Michie et al., 2011), which posits that for a person to engage in a behaviour, they need sufficient capability, opportunity, and motivation. COM-B states that all three of these factors must be present for a behaviour to take place, although they are not necessarily equally influential; which of them plays the biggest role in determining a behaviour is highly context-dependent. COM-B can be used as a tool for **diagnosing** behavioural challenges (i.e. to understand why a target behaviour is not taking place), as well as for **designing** behavioural interventions – by ensuring that an intervention meets these three criteria.

Below, we have outlined key considerations based on COM-B, that apply not only to the six responsible behaviours analysed in this report but also to a wide range of responsible behaviours in the outdoors. Later sections dive deeper into each behavioural challenge.

Capability – Do people have the skills, ability and knowledge to perform the desired behaviour?*Psychological capability*

The vast majority of irresponsible behaviour in the outdoors takes place because a person does not know either the harm that their behaviour causes or how to reduce the impact of their behaviour. For example, visitors may be unaware of the land ownership scenario in Ireland which means they are actually on someone's private property and should behave accordingly, or may not realise that going off trail is potentially dangerous and can affect wildlife and cause erosion. Therefore, interventions that increase recreational users' knowledge and educate them on how, and why, to behave responsibly will be vital. The report explores the best ways to achieve this goal.

Physical capability

Physical incapability is not frequently a cause of irresponsible behaviour in the outdoors as, on the whole, if you are physically capable of engaging in outdoor recreation, then you should also be capable of performing the associated responsible behaviours. Most of these behaviours are fairly straightforward to perform – for instance, bending down to pick up after your dog and then keeping hold of the dog waste (or similarly, your litter) until you reach a bin. For the most part it should be easier (as it is safer) to walk on a trail than not to, but there may be occasions where a trail is not well maintained which may test people's physical capability to stick to it. There are several behaviours that are not physically difficult, but that do require having basic skills or having resources in order to perform them.

Opportunity – Does the physical and social environment enable people to perform the desired behaviour?*Physical opportunity*

Having the required resources to perform a behaviour constitutes physical opportunity. For example, having dog waste bags on you, or a dog leash are essential in order to perform dog-related responsible behaviours. Likewise, although in theory one can carry their litter or dog waste with them, behaving responsibly, which ultimately involves correctly disposing of the waste, can be made a lot easier with accessible bins. As with these examples, physical opportunity can be mostly self-driven – you provide your own resources – or result from adaptations to the physical environment, which would be performed by local authorities, development companies, site managers, or landowners.

Social opportunity

Seeing others either behave or not behave responsibly is likely to influence our own behaviour. This means that interventions have the potential to create a 'domino effect' where changing one person's behaviour may in turn affect others'. That said, one key barrier to responsible behaviour in the outdoors is that most of the time our actions are not visible to others. This reduces the social pressure to comply with established norms, and makes it harder for those norms to establish themselves in the first place. Descriptive social norms describe norms that arise from observing others performing a behaviour. This observation can be direct (for instance, watching someone else litter) or indirect - if you see litter on the trail then you know other people have littered. Prescriptive social norms which refer to what other people approve of. If the current norm is actually undesirable (for instance in this case where behaving irresponsibly is common), one may communicate dynamic norms instead to describe how a behaviour is becoming more or less frequent.

Motivation – Do people have the desire, habit or intention to perform the desired behaviour?*Reflective motivation*

The Theory of Planned Behaviour exclusively focuses on whether people have reflective motivation (behavioural intention) to perform a target behaviour. Reflective and automatic motivation are concepts that derive from the dual-processing theory (Kahneman, 2011) which states that we have two 'systems': one that makes automatic, instant, and subconscious decisions, and one which makes conscious, intentional, and effortful decisions. Some interventions, such as increasing people's knowledge and changing their attitudes, are designed to make people contemplate the harms of behaving irresponsibly in the outdoors and make a conscious decision to avoid that.

Automatic motivation

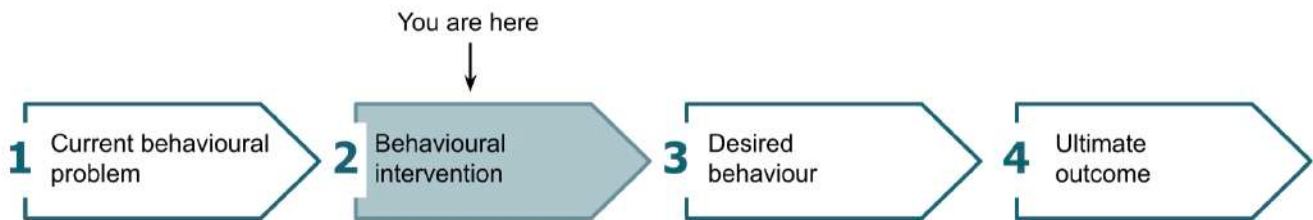
On the other hand, some interventions are designed to affect people's automatic motivation. To some extent, this term is an oxymoron as by taking place automatically the influences on automatic motivation do not seem to be related to motivation as it is traditionally conceptualised. Automatic motivation refers to whether a person is instinctively drawn towards or put off performing a certain behaviour. The latter is often a significant barrier when it comes to performing responsible behaviours in the outdoors as they can be instinctively unappealing. For example, most of us will have an automatic negative reaction to picking up dog waste and this is very difficult to change. There are elements of responsible behaviour that we can make more appealing, however, that will enhance people's automatic motivation (or perhaps more accurately, reduce their automatic dis-motivation).

In COM-B, habits are included under the component of automatic motivation. Habits are behaviours that we perform without conscious thought due to the consistency with which we have performed them in the past. Because they occur automatically, habits are difficult to change. In this context, someone may have gone on the same dog walk hundreds of times and always let their dog off leash. As such, they may not think about bringing a leash with them when they leave their house, or think before they detach the leash from their dog, as doing so is habitual.

3. What kind of intervention to apply?

Potential interventions to overcome behavioural barriers are often self-evident based on the behavioural diagnosis. For instance, if a barrier to proper waste disposal is a lack of bins, then an obvious solution is to provide more bins. In reality, behaviour is complex and can rarely be attributed to a single driver or barrier, and solutions need to be more nuanced and based on multiple insights. For example, providing a bin may be the overarching aim, but to make a difference we need to consider where to place the bin, what size it should be, how to draw attention to it, how to get people to use it correctly, among a range of other factors.

Theory of Change:



Barriers and factors leading to the current behavioural problem can generally be influenced by nine **intervention functions**: education, persuasion, incentivisation, coercion, training, enablement, modelling, environmental restructuring, and restriction (Michie et al., 2011). These intervention functions are enabled by seven **policy categories**: environmental/social planning, communication/marketing, legislation, service provision, regulation, fiscal measures, and guidelines. The relevance of these intervention functions and policy categories varies depending on the target behaviour.

To encourage responsible behaviour in the outdoors, the most relevant intervention functions are education, persuasion, enablement, and environmental restriction and, to an extent, training and modelling. Coercion, incentivisation or restriction are less applicable or appropriate. In terms of policy categories, legislation and regulation have a role to play but are of limited use for changing behaviour in this context, whereas environmental/social planning, communication/marketing, and guidelines are more relevant and potentially impactful. Fiscal measures or service provision are not expected to be used to encourage responsible behaviour.

Another thing to keep in mind when designing interventions to promote responsible behaviour in the outdoors is the heterogeneity of the target audience. For example, people may have very different attitudes towards the environment, which will affect their receptiveness to pro-environmental communications or different risk tolerances, which makes them naturally more or less inclined to perform risky behaviours. There are two implications of this: utilise (behavioural) segmentation to target interventions to whom they will be most impactful; and, implement various types of interventions rather than relying on just one. This approach has the added benefit that each intervention can reinforce the other, so that the overall impact is greater than the sum of each individual intervention.

4. How to trial a behavioural intervention before scaling it?

Trialling different behavioural interventions before rolling them out at scale is always recommended. Regardless of the amount of research that has gone into their development, trialling and iterating is the best way to assess whether they achieve their intended effects. The theory of change from step 1 will help you have a clear understanding of how your intervention works and the outcomes that it is expected to achieve.

1) Have a set of measurable outcome metrics: Start by identifying outcome metrics that allow you to assess the effectiveness of your intervention. Understand whether you can track actual behavioural measures (e.g., the number of litter items collected or disposed of in bins), self-reported behaviours or predictors of behaviours (e.g., self-reported adherence to Leave No Trace principles), or proxy measures (e.g., the amount of waste left behind in outdoor areas).

2) Link the administration of your intervention to your outcome metrics: Check whether you can link the administration of your intervention to your outcome metrics. For example, if you run a campaign encouraging hikers to stay on marked trails, ensure that changes in trail erosion or off-trail footprints are directly attributable to your intervention.

3) Choose a feasible evaluation method: Understand whether you can compare the effectiveness of your intervention against a counterfactual (e.g., a similar group of outdoor visitors who were not exposed to the intervention). While this can be very challenging to do in the outdoors, it will help you identify the most suitable evaluation method for your trial, such as comparing the change in littering in areas where signage promoting responsible dog waste disposal was used versus areas without such signage (in the same time period).

A note on the role of frameworks in this report

This report employs a combination of behavioural frameworks to address each behavioural challenge comprehensively. Acknowledging that the full complexity of behaviour change may not be captured by a single framework, multiple frameworks were utilised. For example, the Theory of Planned Behaviour (TPB) assisted in understanding the intention to perform the responsible behaviour, while the COM-B model helped identify strategies to enhance both ability and motivation. To translate intention into behaviour, some of the recommendations were inspired by the principles of the EAST framework: making the desired behaviour "Easy," "Attractive," "Social," and "Timely." Each framework offers distinct advantages, and their collective application enables a nuanced and effective approach to designing behavioural interventions.



Responsible behaviours in the outdoors

2.1 Principles influencing responsible behaviour in the outdoors

When it comes to responsible behaviours in the outdoors, several unique, overarching themes and behavioural challenges emerge. Outdoor environments are complex settings, where rules, regulations and even social norms often apply more loosely, and the consequences of irresponsible actions are not always immediate or visible, especially for visitors. Furthermore, the desire for adventure and the perception of outdoor spaces as areas for freedom can lead people to ignore environmental or safety guidelines, especially when the immediate rewards of personal enjoyment seem to outweigh the risks or these are difficult to perceive. Understanding these challenges is crucial for developing strategies that can effectively promote responsible behaviours in the Irish outdoors, ensuring that these spaces remain accessible and preserved for future generations. This section collects the challenges that – to varying extents – influence or hinder all environment-, dog-, and safety-related responsible behaviours.

1. Solitary activities and invisible irresponsibility

Many outdoor activities, such as hiking, running, or dog walking, are often done alone or in small groups, limiting the influence of social pressure or group dynamics, and making irresponsible behaviours easy to get away with. In “busier” social settings, behaviours are often shaped by peer expectations, and as such, individuals are more likely to conform to these expectations to avoid judgement or to fit in. However, in more solitary outdoor activities, these social pressures are minimal or non-existent, allowing individuals to make decisions based on personal desires or convenience rather than group norms or rules.

Additionally, the nature of outdoor environments can make irresponsible behaviours less detectable or immediately noticeable. For example, littering or going off trail may not have an immediate, visible impact, and without others around to witness or call out these behaviours, people may feel less compelled to adhere to guidelines. This lack of external accountability often leads individuals to assume that their actions will go unnoticed, making them feel less obliged to act responsibly.

2. Weak and subjective social norms

Social norms in outdoor environments are often interpretive, subjective, and sometimes weak, meaning they can be easily misunderstood or misapplied, especially by individuals who are unfamiliar with local practices. The influence of subjective norms — how we perceive what others expect of us — can significantly shape behaviour, particularly when rules or expectations are not clearly communicated. Because outdoor spaces often lack explicit signage or universal guidelines, and norms are often shaped by the local community, visitors or newcomers may struggle to understand what is deemed acceptable behaviour. For example, if a hiker sees bagged dog waste simply discarded on the side of a trail, they may mistakenly believe it is socially acceptable to leave their own dog’s waste in the same way. Similar misunderstandings can occur regarding land ownership and access, where users are not aware that they are accessing the land based on the goodwill of the landowner.

3. The “commons dilemma” and delayed consequences

Most sustainability and nature conservation-related responsible behaviours are impeded by the “tragedy of the commons” – despite the outdoors in Ireland not actually being common land. The concept of “commons dilemma” states that if all individuals with access to a common resource act in their own (rational) self-interest this will eventually lead to the depreciation of resources. This is due to the cumulative effects of behaviours which when performed one time would not be immediately visible or noticeably costly. For instance, one person walking off-trail will not cause significant degradation, but if hundreds or thousands of people each do this it leads to significant harm. In outdoor spaces, feedback loops (the environmental signals that would normally alert people to negative impacts of their behaviour, such as visible trail erosion, declining wildlife populations, or ecosystem deterioration) are often unclear or delayed. The problem of lack of understanding is often heightened by the misconception that natural ecosystems are robust and can easily “bounce back” or recover from human impact.

4. The intention-action gap: when good intentions fall short

The intention-action gap refers to the disconnect between a person’s intention (e.g. to act responsibly) and their actual behaviour. Even when individuals have the intention to follow responsible practices — such as keeping a dog on a leash, cleaning up after them, or not disturbing nature — various situational factors can prevent these intentions from becoming actions. Practical issues, such as not having the necessary tools (e.g., poop bags or trash bins), being influenced by peer behaviour, inclement weather, stress or other emotional states often lead people to act in ways that contradict their good intentions. For example, a person may bring a bag to pick up dog waste but abandon the task when their hands are cold and they don’t want to take off their gloves, or they may let their dog off-lead, assuming they can maintain control, despite knowing it’s a rule violation.

This disconnect can lead to cognitive dissonance, a psychological discomfort that arises when one’s actions are inconsistent with their attitudes. To resolve this discomfort, people often adjust either their actions or attitudes. If a dog owner forgets to bring a lead and allow their dog to roam freely, they may justify their behaviour by convincing themselves that their dog won’t cause harm or that they can control it more easily than they initially thought. Over time, this rationalisation can lead individuals to adjust their attitudes toward responsible behaviour, making it easier to justify irresponsible actions in the future.

5. Gaps in awareness, misconceptions, and unintentional irresponsibility

For many recreational users — especially visitors from cities — the outdoors feels like a “foreign land,” unfamiliar and disconnected from their everyday lives. It is a land whose “language” they do not understand and whose rules they are often unaware of. This is compounded by the increasing differences between urban and rural areas, a sense of disconnectedness from nature and its inhabitants – both the wildlife and the local communities. This unfamiliarity creates gaps in awareness and knowledge about what rules and regulations apply and what the responsible behaviours might be. As a result, visitors often fail to consider the perspective of locals, such as landowners, and may not show the same respect for rules, nature, and wildlife as they would if they fully understood the consequences of their actions. For example, a hiker might not understand the impact of their steps or a dog owner might not realise the dangers of letting a dog chase wildlife. This is compounded by the fact that the consequences of harmful actions are indirect and not immediately apparent, making the long-term consequences harder to empathise with.

Signs in the outdoors often prohibit certain behaviours without providing education or explaining *why* those rules exist. In an ideal world, users would comply with these regardless of the reasons behind which they may or may not be aware of. However, in practice, not understanding why a behaviour is being encouraged can reduce compliance. Importantly, it also makes it less likely users of the outdoors would recognise the need to perform such a behaviour in a similar context without being asked to. For example, a sign stating 'No Dogs Allowed' communicates a specific restriction for that location. However, a sign stating 'No Dogs Allowed – Dogs Pose a Threat to Farm Animals' not only conveys the rule but also provides context. This added explanation increases the likelihood that users will avoid bringing dogs near farm animals in other settings, even when no sign is present, because they understand the potential risk.

6. Adventure mindset and perceived freedom

Nature and the outdoors – unlike the city – are often seen as spaces for adventure, exploration, and freedom. They are perceived as places where different rules, risks, and dangers apply, offering an outlet to test boundaries without fear of judgement from others. This sense of freedom, coupled with thrill-seeking or adrenaline-driven behaviours, can lead individuals to easily overlook safety concerns or environmental responsibilities. The belief that nature is "wild" and "untamed" often fuels the justification for behaviours like hiking off-trail, letting dogs roam freely outside designated areas, or engaging in risky adventures. This mindset creates a tension between the desire for personal freedom and the need for ecological and safety responsibility, resulting in the disregard of rules.

Novices or first-time visitors are particularly prone to underestimate the risks associated with certain actions, such as disregarding weather conditions, swimming in unfamiliar waters, or approaching wildlife. On the other hand, experienced outdoor enthusiasts may become desensitised to risk, leading them to engage in behaviours that endanger themselves or others, as they have done a million times in the past without major consequences. These differences in risk perception create varying standards of responsible behaviour across different groups, further complicating efforts to ensure safety and protect the environment.

7. Personal enjoyment and sense of entitlement

Many people turn to the outdoors as an escape from the responsibilities and constraints of everyday life, seeking freedom, relaxation, and enjoyment. However, this pursuit of personal freedom can sometimes foster a sense of entitlement; an implicit belief that nature exists for their use and enjoyment on their own terms. This mindset can lead individuals to dismiss or resist rules, guidelines, and environmental responsibilities, perceiving them as unnecessary restrictions in a space they associate with freedom.

Entitlement may manifest in various ways: seeking the perfect photo regardless of environmental impact, exploring off-trail areas, or allowing dogs to roam freely despite signage or potential risks. Even the type of activity pursued can influence how entitlement plays out. While low-impact activities like walking or hiking often encourage mindfulness and connection with nature, high-adrenaline sports such as mountain biking may heighten risk-taking and reduce attentiveness to one's surroundings. In such cases, the drive for excitement and personal fulfilment can further displace consideration for safety, environmental stewardship, and respect for others, including landowners. Addressing this sense of entitlement requires not only clear communication and infrastructure, but also cultural shifts that reframe nature as a shared, protected space, not a personal playground.

8. Responsible tasks are unappealing and restrictive

Given that people go to the outdoors to enjoy it and let go of everyday responsibilities, responsible behaviours that limit the feeling of freedom can be a challenge. This is particularly true for visitors or occasional users of natural spaces, who may find responsible actions — once they are made aware of them and can no longer attribute neglect to ignorance — neither fun nor particularly appealing. Tasks like picking up litter or disposing of dog waste are unlikely to inspire intrinsic or automatic motivation. Instead, they often require habit formation, reflective motivation, or a shift in self-perception — where individuals see themselves as inherently responsible, even when the behaviour itself is unpleasant.

9. Lack of clear and consistent information

Information about responsible outdoor behaviour is often lacking or is inconsistent and unclear, making it challenging for individuals to make well-informed decisions. Arguably the biggest source of confusion comes from the unique context of Ireland, and the fact that much of the land is privately owned, a detail that many visitors may not be aware of. This lack of awareness can lead to confusion about which areas are accessible and what rules apply. While trails are freely accessible, they often pass through private property where the landowner's rules must be respected. This, combined with inconsistent or unclear signage, can result in unintentional violations, such as trespassing or disregarding rules designed to protect both the environment and the landowner's rights, farm animals and crops. For instance, signs like "no dogs allowed" may be posted, but without any explanation that this is to protect vulnerable wildlife or avoid worrying farm animals, visitors may fail to understand the broader environmental consequences of their actions, reducing their motivation to comply with regulations. This lack of contextual awareness about private land ownership among visitors and the rules that come with it makes it harder for individuals to navigate the outdoors responsibly, leading to frustration for both visitors and landowners alike.

10. Limited regulation and weak enforcement

By its nature, the outdoors is less regulated than urban settings, and freer compared to the city or urban settings, which can undermine compliance to important guides or regulation, and leave personal ethical choices becoming the primary motivator. Although the majority of recreational users want to respect landowners, other users, and the environment, there is a small minority who are uninterested in acting pro-socially. Regulation can be used as a 'stick' to coerce compliant (responsible) behaviour, but there is currently weak enforcement of the (limited) regulation that exists. For example, dog owners can receive on-the-spot fines for failing to pick up after their dog, but only 37 fines were issued across the whole country in 2024 (The Irish Independent, 2025).

Weak enforcement of regulation is unavoidable given the vastness of the outdoors and its low population density which leads to many actions being performed solitarily. Without this visible presence of rules or consequences, individuals may not feel compelled to follow safety or environmental guidelines. This can manifest in various ways: ignoring safety warnings, littering in already littered areas, or engaging in restricted activities, such as unauthorised swimming, when others are seen in prohibited areas. While on-the-spot fines can be issued for example for a dog not being under its owner's control, these are rarely enforced. Moreover, even when dog owners are aware of such fines, the joy of seeing their dog roam freely every week often outweighs the risk of paying a one-time fee.

2.2 Overarching strategies

Just as several common challenges have emerged around encouraging responsible enjoyment of the outdoors, this report also identifies a set of overarching levers and guiding principles to support behaviour change across different contexts. These strategies are shaped by Ireland's unique outdoor access landscape, where much of the countryside is privately owned, and access is frequently granted through the goodwill of landowners rather than formal legal rights. This context demands a more sensitive and collaborative approach, where fostering mutual trust, respect, and shared stewardship is essential to maintaining and improving access for recreation.

Visitor behaviour is typically managed through two broad types of interventions: **indirect strategies**, such as education and communication initiatives, and **direct strategies**, including regulatory enforcement, restrictions, or physical deterrents (Manning 2003; Marion & Reid 2007). Indirect management approaches have traditionally been favoured for minimising environmental impacts from recreation (Hammitt et al. 2015) because they are often more cost-effective, less intrusive from the visitor's perspective, and better aligned with the values of outdoor recreation experiences (Marion et al. 2016; Park et al. 2008). This report splits up "direct" measures into those related to those changing the choice architecture, and those using regulatory measures to achieve the desired behaviour change. This results in three categories: strategies to **encourage, enable, and enforce** responsible behaviour. This three-part framework recognises the complexity of outdoor recreation in Ireland and the need for a layered, context-sensitive and comprehensive approach. Sections 3, 4, and 5 illustrate how these strategies can be applied to three key domains: environment-, dog-, and safety-related responsible behaviours.

ENCOURAGE

Shape attitudes and awareness through information and strategic communication

This category encompasses a wide range of indirect strategies aimed at shaping people's attitudes, motivations, and social norms through education, persuasive messaging, emotional appeals, and awareness-raising. In the Irish context, these approaches must be especially thoughtful. Rather than fostering a sense of entitlement to access, communication should promote shared responsibility, mutual respect, and an understanding of the real impacts that recreational behaviours can have on land, livelihoods, and local wildlife. The most effective messages are those that connect with users on a personal level through relatable comparisons, emotional storytelling, or the humanisation of landowners, farm animals and wildlife. Campaigns that make responsible behaviour feel intuitive, socially supported, and emotionally resonant are more likely to lead to lasting change and be well-received by both recreationalists and landowners alike.

→ Inform and educate

Provide clear and accessible information about the desired responsible behaviour, the reasoning behind why it matters and how to do it. Inform people about the unintended negative consequences of irresponsible behaviours using a positive, encouraging tone to acknowledge that such actions often stem from unfamiliarity with the environment and its rules and regulations, rather than malice (Cialdini & Winter, 1998). Offer instructions and guidance both on-site (e.g., through signage) and online to build awareness and understanding, as informed individuals will be better equipped to make decisions aligned with societal and environmental norms. By reducing ambiguity and fostering understanding, this approach builds confidence in

responsible actions. Problematic recreation behaviours can be classified into five basic types along a continuum: illegal, careless, unskilled, uninformed, and unavoidable actions (Manning 2003). Each category is influenced by visitor education and information to varying levels. On the two ends of the continuum, illegal and unavoidable actions are considered to be little influenced, whereas careless, unskilled, and uninformed actions are considered to be more amenable to education and information (Park et al. 2008).

→ **Persuade**

Design communications that effectively persuade users to behave responsibly. Generally, the most persuasive messages are those delivered in-person, but this is often not feasible (Abrams et al., 2020). Certain messages may have already reached 'saturation', whereby users are already aware of them and yet their behaviour has not changed, which suggests it is time to implement new messages. Messages are most persuasive when they focus on 'personal benefit' to the user, rather than solely encouraging them to perform a behaviour for the benefit of others' (including animals).

In general, it is more persuasive to frame a desired behaviour as a positive action as opposed to a negative one. For example, ask users to 'Take your litter away with you' rather than 'Do not leave your litter behind'. Although humans are loss and risk-averse, we have a positive-framing bias that means we are typically more receptive to positively-framed behaviours. In addition, negative framing can inadvertently imply that other people perform that behaviour, creating an undesirable social norm. That being said, it can still be important to highlight the harmful consequences of a behaviour to convey its importance. Given the context-dependent nature of persuasive messages, it is recommended that, where possible, alternative versions of persuasive messages are evaluated in their specific contexts to identify which is most effective at changing user behaviour.

The vast majority of outdoor users are well-intentioned and any harm they cause is unintentional, however there is a sub-section of users who openly choose to disregard the requests of landowners, and to behave irresponsibly and do as they please; persuasive messages can be useful to target the beliefs and attitudes of such users.

→ **Increase the visibility of irresponsible behaviours and their consequences**

As described in the previous section, social norms in the outdoors are often invisible, making it harder for individuals to act responsibly without social accountability and the judging eyes of others. By making social norms explicit or creating the impression of being watched (e.g., through symbolic cues like images or eyes of animals), individuals are prompted to stop and reflect on their actions. This strategy draws on the principles of social proof and the watching eyes effect, which are effective because humans are inherently influenced by the perceived behaviour of others and the presence of monitoring cues. Interventions that increase the (perceived) visibility of behaviour reinforce accountability, even in less structured environments.

→ **Personalise and humanise messages and signs**

Describe the specific animals, birds and wildlife that live in the area, so that visitors can get to know them and develop empathy for them. Even consider using anthropomorphism to bring nature closer to people (e.g. birds welcoming visitors to their home) and get them to reflect. Similarly, engage with local landowners to highlight their perspective (e.g. refer to them by name, instead of stating "privately owned land"), showing how responsible behaviour directly impacts their livelihoods. Such personal stories can tap into emotional connections, which is often a stronger motivator for behaviour change than purely rational appeals. When

people feel a personal connection they are more likely to respect the other party – may that be the landowner or specific bird species), and they are more likely to internalise and act on the desired behaviours.

→ **Make nature feel familiar by drawing relatable comparisons**

Urban visitors in particular may be unfamiliar with rural customs and unaware of responsible ways to behave when recreating in the outdoors. That being said, there are plenty of rural dwellers who perform irresponsible behaviours that would benefit from comparisons being drawn between outdoor environments and more familiar settings. Policymakers should not over-emphasise the irresponsibility of urban dwellers so as to create an unhealthy urban/rural divide amongst recreational users, or to narrow the scope of potential interventions.

For example, highlighting how farms are equivalent to offices; they are workplaces for local landowners. This reframing leverages the principle of contextual association, making outdoor responsibilities more relatable and intuitive. By connecting new behaviours to familiar contexts, this strategy reduces psychological distance and fosters a sense of responsibility and respect.

→ **Appeal to positive emotions**

Leverage emotional appeals such as joy, awe, and a sense of adventure to motivate responsible behaviour – even when the emotions take precedence. Use local examples to evoke pride in preserving the natural environment and to show tangible benefits for the community. Highlight the beauty of nature and the importance of protecting it for future generations. Emotional appeals foster intrinsic motivation, which is effective because it creates a deeper, personal commitment to the behaviour. When people feel inspired or emotionally connected, they are more likely to act in alignment with their values and sustain those actions over time.

ENABLE

Create conditions that support and reinforce responsible choices

Enable strategies focus on shaping the physical and social environment in ways that make responsible behaviour easier, more intuitive, and more attractive. These interventions reduce the effort required to do the right thing and help bridge the gap between good intentions and action. Crucially, enable strategies in the Irish context must strike a balance: they should guide and support user behaviour without imposing unnecessary burdens on landowners. Thoughtful placement of signage, bins, or dog control infrastructure like gates for instance, can reduce friction and prevent conflict. At the same time, users should be encouraged to take personal responsibility when formal supports (like bins) are not feasible due to maintenance costs or access limitations.

→ **Promote planning ahead**

Get people to plan for acting responsibly before they enter the new and stimulating environment of the outdoors. Provide tools and reminders to help them bring the necessary equipment to engage in outdoor activities responsibly. Commitment devices, such as pledges or checklists, can prime and reinforce intentions by translating vague ideas into concrete actions. When visitors plan ahead, even the heightened excitement,

sense of adventure and adrenaline can not let them forget about the measures they need to take to minimise harm.

→ **Make the responsible behaviour easier and more attractive**

Promote the most convenient and attractive way of enjoying the outdoors responsibly. For instance, this can include environmental restructuring methods like installing aesthetically pleasing, easily accessible bins (where feasible) or advocating for the most convenient and “attractive” way of carrying dog waste (e.g. double bagging or using special, no-smell containers). These measures reduce friction and enhance the feasibility and even enjoyment of responsible choices where possible, however, they must be designed and located in collaboration with landowners, ensuring they fit the landscape and don’t compromise agricultural or conservation needs.

→ **Model the desired behaviour**

Encourage experienced outdoor users, activity operators and volunteers, to set an example to other users by modelling the correct responsible behaviour. These groups can become allies or ambassadors if equipped with the tools and confidence to intervene and educate others when they witness irresponsible actions or someone disregarding guidelines. Similarly, involve landowners in these efforts. Personal interactions leave a deeper impression, while also providing opportunities for questions, dialogue and a proper understanding of consequences. Over time, these interactions can build positive social norms, relationships with locals, and help users become members of the “in-group of responsible enjoyers” of the outdoors. Modelling the desired behaviour also demonstrates how feasible it actually is, making it easier for others to follow suit.

The Volunteer Ranger Programme, a part of the Dublin Mountains Partnership (DMP), is an example of successful modelling. ‘Meet & Greet’ days, guided walks, and educational events enable volunteers to engage with recreational users on the subject of responsible behaviour in the outdoors (Gov.ie, 2023). More research is needed to measure the effect of volunteers on behaviour change, but anecdotal accounts state that recreational users are happy to be engaged by volunteers and to comply with their suggestions.

→ **Change the choice architecture**

Design the physical and decision-making environment – where possible – to nudge individuals toward responsible behaviour. For example, place bins in convenient locations such as car parking opportunities, or at the start of the trails and clearly mark trails, to subtly influence decisions without requiring active choices. Where possible, simplify choice to make responsible actions the default option to reduce cognitive effort and make the desired behaviour the path of least resistance. Where environmental restructuring or changing the choice architecture is not feasible (e.g. bins cannot be placed due to the cost implications of maintaining them), proactively acknowledge these limitations and redirect users to the desired behaviour (e.g. bringing trash home with them).

ENFORCE

Implement and enforce regulation to promote adherence

Enforce strategies involve the use of rules, restrictions, and sanctions to set clear behavioural expectations and ensure accountability. In the Irish context, overly rigid or top-down enforcement risks damaging the trust and cooperation that underpin permissive access. However, the absence of any accountability can send mixed messages, reduce the credibility of educational campaigns, and allow a small number of repeat offenders to compromise access for the broader public. The goal, therefore, is not to increase enforcement for its own sake, but to implement proportionate, clearly communicated, and context-sensitive measures that support landowners, protect sensitive environments, and uphold shared standards. Enforcement should be used strategically, focused on serious or recurring issues, and always balanced with education and enabling strategies. When delivered fairly and transparently, it reinforces social norms, deters harmful behaviour, and demonstrates a collective commitment to sustaining access for everyone.

→ Implement and enforce regulation

Introducing or enforcing regulations helps establish clear and consistent expectations for responsible outdoor behaviours. By mandating or restricting specific actions, these rules reduce ambiguity about what is acceptable conduct, making it easier for individuals to align their behaviours with environmental and safety goals. Regulations also create a shared standard for behaviour that applies to everyone, fostering a sense of accountability and fairness. This approach is particularly effective because it addresses the key challenge of not everyone being intrinsically motivated to act responsibly. Some individuals may lack awareness of best practices, while others prioritise convenience or personal enjoyment over responsible behaviour. Regulations act as a guiding framework that sets boundaries and outlines consequences, ensuring that even those less motivated to comply, including those who would otherwise disregard behaving responsibly, are encouraged to do so. Enforcement messages should be endorsed by trusted voices such as landowners, local authorities, and community groups to strengthen their legitimacy and ensure they are seen as fair and community-backed rather than top-down or punitive. When enforcement is framed as a shared responsibility, it reinforces social norms and encourages voluntary compliance. Community-based models, such as peer-led stewardship or volunteer rangers, can also help monitor behaviour and prompt corrections in a way that feels constructive rather than confrontational. Where more formal enforcement is necessary, it should focus on repeated or deliberate non-compliance that risks undermining access and damaging trust.

A note on the three strategies

To date, efforts to promote responsible behaviour in the Irish outdoors have relied predominantly on **encourage** strategies, especially through educational awareness campaigns, and simple restrictive signage. These initiatives have been valuable in raising general awareness and building intention to behave responsibly, but the extent of actual behaviour change achieved has been limited. Research and consultation with stakeholders suggest that while many users are aware of recommended behaviours, a gap often remains between intention and action.

Few interventions to date have strongly focused on the **enable or enforce** strategies, which can provide the structural supports and accountability mechanisms needed to drive sustained behaviour change. However, there are promising examples – such as physical infrastructure that supports desired behaviours (e.g. well-marked trails, dog control areas), or regulated access policies – that demonstrate impact when appropriately designed and implemented.

This report includes a mix of all three strategies – encourage, enable, and enforce – acknowledging that no single approach is sufficient on its own. While over half of our recommendations fall under the ‘encourage’ category, this reflects not a repetition of past approaches, but rather a rethinking of how encouragement is delivered. These recommendations are informed by behavioural science and designed to go beyond broad messaging, instead using targeted, timely, and context-specific communications that speak directly to users’ motivations, values, and decision-making moments. This includes tools such as social norming, commitment devices, and behavioural prompts, which have been shown to be more effective than traditional awareness campaigns alone.

Importantly, this report does not recommend relying solely on education and communication. Rather, it advocates for a more **strategically balanced approach**, where encouraging messages are reinforced by enabling infrastructure and, where appropriate, enforcing mechanisms. This multi-layered strategy aims to address the limitations of past efforts, close the intention-action gap, and support responsible behaviour even among those with low awareness or low motivation.

Environment-related responsible behaviours



In the context of the outdoors, environment-related responsible behaviours refer to actions taken by users to lessen their negative environmental impact. This section highlights three behaviours that are particularly important to target: disposing of waste correctly, treating nature and wildlife with respect, and keeping to paths and trails where possible. However, there are numerous other behaviours that outdoor recreationists can perform to reduce their impact on the natural environment. In practice, it is impossible to ‘leave no trace’ when spending time in nature, yet, there are certain actions we can take (such as the ones mentioned above) that minimise our negative impact.

The role of environmental attitudes

As modelled in Azjen’s Theory of Planned Behaviour, attitudes are a key factor in determining behavioural intention. For this example, pro-environmental attitudes are an important precursor to behaving pro-environmentally in the outdoors. Gifford (1997, p.47) defines environmental attitudes as ‘concern for the physical environment as something that is worthy of protection’. Bernardi, Linde & Loannides (2023) highlight the heterogeneity of outdoor users’ environmental attitudes; some have much stronger pro-environmental attitudes than others.

Certain papers have found correlations between various demographic or behavioural factors and environmental attitudes but often these are context-specific. Hoyem (2020) finds that spending time in nature helps to strengthen pro-environmental attitudes, which in turn should increase the person’s *intention* to behave pro-environmentally. This is particularly true at the local level, where people develop ‘place attachment’ to the natural areas where they spend the most time, which causes them to become particularly concerned about environmental harm in that specific ‘behavioural setting’ (du Preez & Heath, 2016). The strength of this effect however is moderated by whether users view their surroundings as a ‘space of play’ or a ‘space of responsibility’ (Brown, 2014). When outdoor recreation takes place in ‘domesticated’ nature as opposed to ‘wild’ nature causes participants to focus less on the environment itself.

The importance of knowledge

Intention to behave pro-environmentally in the outdoors, without knowledge of how to do so will also prevent users from displaying responsible behaviour. On the whole, knowledge of responsible behaviour is low, with much of the irresponsible behaviour that takes place is due to naivety of users rather than deliberate disregard. Leave No Trace Ireland’s 2024 Public Attitudes Survey revealed that a minority of Irish adults realise the consequences of certain irresponsible behaviours. For instance, just 37% are aware that removing flowers and other parts of nature to keep as souvenirs can damage ecosystems, and nearly half were unaware that they shouldn’t get too close to wildlife to take photos or feed them. 93% of respondents to the Central Statistics Office’s 2022 survey said they would like to increase their knowledge of nature, with the second-most common reason (69%) for this being ‘to reduce my environmental impact’.

3.1 Correctly disposing of waste

The behavioural challenge

Litter - improperly disposing of waste by leaving it on the ground in public places - tarnishes the beauty of the natural environment and contributes to several serious environmental harms, for example by contaminating water sources, impacting wildlife, disrupting ecosystems, and polluting the air. Given the harms that littering causes, and the frequency with which it takes place, it is one of the most pressing environmental problems in outdoor recreation.

Two behaviours - don't litter in the first place, and pick up litter you come across

La Hart & Bailey (1975, p. 37) make the point that reducing litter involves two actions: 1) disposing of waste properly in the first place, and 2) picking up litter that is *already* on the ground. The latter is typically much harder to achieve due to being more inconvenient and requiring users to pick up after others (Brown, Ham & Hughes, 2010). Indeed, du Preez and Heath (2016) found that picking up litter was the least likely pro-environmental activity for spectators at a cycling event, meanwhile throwing rubbish in bins was the most likely. This report principally focuses on how to improve the former behaviour, although it does include evidence from studies investigating litter pickup. Although these actions are not 'functionally equivalent' (i.e. what motivates someone to hold onto their own waste may not equally motivate them to pick up someone else's), there are several key insights that relate to both behaviours (La Hart & Bailey, 1975, p. 45).

People are unaware of the extent of littering's harm

Generally, people are aware that littering is not a responsible behaviour. This explains why Burgess & Hendee's (1972) study which observed waste disposal behaviour at a national park in Washington, USA found that having children in the group made groups less likely to litter. For people to change their behaviour in these circumstances they must therefore know that it is irresponsible to litter. That being said, it is plausible that most people who litter are unaware of the *extent* of the harm that littering causes. For instance, they may think that littering is purely an aesthetic problem, but not realise the impact it can have on wildlife or water sources. If they are used to urban environments where littering is common but more easily and routinely picked up (by workers) then they may not realise it is a more serious problem in rural settings (Brown, Ham, and Hughes, 2010).

Littering is the easy option

Holding on to waste that needs disposing can be a cumbersome task - no one wants to carry waste around with them all day. Portman and Behar (2020) found that beachgoers generally preferred to get up and dispose of their waste rather than keeping it next to them until they next encountered a bin; given the extra effort required to make 'special trips' to the bin, this indicates people's desire *not* to hold onto waste. As such, it may be an immediately attractive (and easy) option for people in the outdoors to litter rather than holding onto their waste until they next encounter a bin.

Frequent, attractive bins aid correct waste disposal

Providing frequent bins makes it easier (and therefore, more likely) for users to not litter. Making these bins as attractive as possible is important. Portman and Behar (2020) ran a study where they designed three different bins (a basic control, an 'enabling' bin which was attractively designed, and a 'motivating' bin which had

additional 'interactive' features). They found that the effective bin design can increase waste disposal. Conversely, bins that are noticeably unattractive - such as if they are overflowing or smell particularly bad - can deter people from using them (Leijdekkers et al. 2015, p. 23). That said, it is not practical, feasible, or advisable to provide bins in many rural locations (e.g. along trails where wildlife might scatter trash), and so it is important that recreational users understand that they should keep hold of their waste and take it home with them when bins are not provided.

Social norms influence littering (positively and negatively)

Social norms can play a significant role in a person's decision to litter or not. Studies have found that areas which are more littered to start with attract more litter (Wu, Lin, and Liu, 2020). This is in-line with the 'broken windows theory' which states that people are more likely to commit crime in an area where it has clearly already taken place. There are two main explanations for this; first, that if an area is already littered this indicates a descriptive social norm that it is common to litter. Second, the existing litter reduces the beauty of the environment, this may weaken the human-nature relationship which aids environmentally-responsible behaviour (Høyem, 2020).

In-group norms are particularly strong

Within groups, social norms to litter or not litter can play a significant role. For example, Leijdekkers et al. (2015) found that peer influence is the greatest influence on littering behaviour amongst youngsters. Unfortunately, they find that group norms of littering are common and this can cause individuals to believe that they would be 'ridiculed or excluded' if they do not conform to this by also littering (pp. 12-13). This finding is in line with Goldstein et al.'s (2008) finding that adherence to group norms is strongest when the group is important to an individual. La Hart & Bailey (1975) found that whether or not a group of children would pick up litter was often an 'all or none affair', where if a single individual began to do so, others would follow their example (p. 44). This demonstrates the outsized influence that individuals can play in creating norms, particularly if they are highly regarded within their group.

Evidence base | Case study highlights

Can persuasive and demonstrative messages to visitors reduce littering in river beaches? (Cingolani et al., 2016)

Cingolani et al. (2016) tested the effectiveness of combining both persuasive and demonstrative messages to reduce littering by visitors to beaches in Argentina. They found that having a volunteer make a verbal request to visitors to dispose of their litter properly before they leave the beach, whilst visibly picking up litter when walking between groups to pass on this message, led to a 35% reduction in littering per visitor.

Picking Up Litter - An Application of Theory-based Communication to Influence Tourist Behaviour in Protected Areas (Brown, Ham, and Hughes, 2010)

Brown, Ham & Hughes (2010) compared the effectiveness of two different persuasive messages displayed on signs in Mount Field National Park in Tasmania at increasing litter pickup. Both messages were developed after understanding park visitors' beliefs and attitudes. When no sign was used (control condition), one in six groups would pick up a can deliberately placed on the walking trail. However, when they had recently passed a sign saying 'What will you do when you see it?' compliance increased by 14% to one in every 3.2 groups. There was even greater compliance with the sign that read 'If not you, who?', where one in every 2.7 groups would pick up the can (an increase in compliance of 19%).



Examples of messages (Brown, Ham, and Hughes, 2010)

Reducing Children's Littering on a Nature Trail (La Hart & Bailey, 1975)

In 1975, La Hart & Bailey compared five interventions' effectiveness at reducing schoolchildren's littering and encouraging them to pick up litter they came across on a nature trail in Florida. They found that environmental education, a (five-minute) lecture on the harms of litter, and a short anti-litter statement were all effective at reducing children's littering. They believe the lecture and the statement were similarly effective due to children 'tuning out' once they 'got the message'. Incentives did not work to reduce littering in the first place, but they were very effective at motivating children to pick up litter. This study highlights the importance of education in reducing littering behaviour.

La Hart & Bailey (1975) found that the amount of littering by schoolchildren was significantly higher after lunch than before due to them having bought sweets during their lunch break. The baseline level of littering before lunch was 0.6 pieces of litter per child, whereas after lunch it was 1.4 - an increase of nearly 150 per cent. Thus, bringing potential waste into these environments in the first place is correlated with increased littering and so efforts should be made to reduce the amount of waste that is brought in.

Using visitor observations to predict proper waste disposal (Mateer et al., 2020)

Mateer et al. (2020) observed visitors across three national parks in the United States to answer the question: 'what observable factors predict whether visitors...dispose of their waste properly or not?' Group size and gender did not seem to predict littering, but whether or not there was a child in the group and whether the group 'meaningfully interacted' with signage (i.e. stopping to read the text on a sign) did. In addition, a group that appeared confused by waste/recycling infrastructure (which nine per cent did) was nearly three times less likely to dispose of waste correctly than a group that was not confused. This study indicates the importance of attention-grabbing but clear signage, and ensuring that it is easy to understand correct waste disposal practices. In addition, the authors suggest that the effect of children in improving responsible waste disposal behaviour indicates that getting visitors to think about the long-term impacts of irresponsible behaviour on the environment (i.e. their 'intergenerational responsibility') is a potentially powerful strategy.

Summary of recommendations

Inform and educate

As for all of the responsible behaviours identified in this report, targeting people's attitudes and beliefs around littering to convey the seriousness of this behaviour is powerful. It is likely that most users do not appreciate the extent of the harm that littering causes, and so these negative consequences should be highlighted. Inform visitors of the importance of disposing of their waste properly, including taking it home with them when bins are not available.

Persuade

Brown, Ham, and Hughes' (2010) experiment which found the two persuasive signs increased litter pickup by 14 and 19 per cent respectively. Given that it is significantly more difficult to change people's behaviour to comply with picking up litter, as opposed to not littering in the first place, this finding suggests that persuasive signage would have an even greater effect at reducing incidences of littering. Ensuring that signage is salient is vital - 70 per cent of individuals that Mateer et al. (2020) observed at US National Parks did not stop to read signage, but the 30 per cent that did were 125% more likely to properly dispose of their waste.

As well as catching people's attention, signage must be easy to understand. Given the increasing proportion of international activity tourists visiting Ireland, this may require signage that is either translated into other languages, or that uses visual cues sufficiently well as to make the instructions clear to all visitors.

Promote planning ahead

Given that it is common for there to be no bins in remote outdoor areas, people must therefore keep hold of their waste until they have an opportunity to dispose of it. Often this means taking any waste they produce whilst in the outdoors home with them - "pack it in, pack it out" (Leave No Trace). It is therefore wise to bring resources with you that makes it easier and less unpleasant to hold onto your garbage. Another consideration is to encourage users to reduce the amount of potential litter they bring with them in the first place. By preparing better, for instance by bringing food and drink to consume during their outdoor activity in reusable containers rather than single use plastic that they might be tempted to litter, users can increase their chances of disposing of waste responsibly.

Accordingly, there should be communications that focus on the importance of preparing for outdoor recreation, that are targeted at people before they reach the outdoors. Digital advertising, social media communications, and online articles will be the most appropriate channels for this, although on-site signage may still be effective at prompting people to prepare better before the next time they come back to the outdoors, especially if they are frequent users.

Make the responsible behaviour easier and more attractive

Making any targeted behaviour as easy as possible is always helpful to increase compliance. In this case, that means frequently providing bins that reduces the burden on people to carry their waste with them in order to not litter. Signs should be implemented to inform users when they are near a bin to motivate them to continue holding their rubbish until they reach it - this is known as prompting (Leijdekkers et al. 2015, p. 25); after all, it is not the actual distance that a person has to carry their waste for, but the distance they perceive they will have to.

There are difficulties associated with providing bins in certain outdoor spots. Some people believe that (unsightly) bins detract from the natural beauty of the outdoors. However, given that litter does the same and has severe environmental effects as well, there are flaws in this argument, and it is further weakened if bins are designed to fit well with their surroundings (Leijdekkers et al. 2015, p. 24). However, providing bins in remote places can be infeasible if they cannot be emptied regularly to avoid them overflowing. In these cases, communication should focus on the importance of holding onto waste, including taking it home with you.

Model the desired behaviour

Several studies have demonstrated the power of human interventions and modelling the responsible behaviour when it comes to littering. Verdonk, Chiveralls, & Dawson (2017) find demonstrating correct waste sorting behaviour at a music festival to be more effective than signage. Wagstaff & Wilson (1988) found that river guides making a verbal appeal to the participants on their rafting tours to not litter, and combining this with role modelling by visibly picking up litter themselves, had a significant impact on the amount of litter picked up by tour participants. Similarly, Cingolani et al. (2016) found that combining a persuasive message (a personalised human request to not litter on the beach) with a demonstrative message (the messenger then picking up litter in front of the group they had just spoken to) caused a 35% reduction in littering. Thus, where possible we suggest having volunteer rangers talk to recreationists using the outdoors.

Change the choice architecture

The more attractive the outdoor environment that users are recreating in, the greater their intention is not to vandalise it (Yang and Chen, 2013). As well as creating subjective norms (if there is already litter on the ground, then it must be 'normal' to litter), Wu, Lin, & Liu (2020) argue that 'vandalising' a clean area would cause users to experience a stronger cognitive dissonance reaction than if the area was already littered - which makes them less likely to do so. Furthermore, the beauty of nature stimulates pro-environmental attitudes (Park & Park, 2019), so maintaining this where possible is advisable.

It is therefore a sensible intervention strategy to clean up and maintain natural environments as it makes people less likely to litter them going forwards. The unique land ownership in Ireland and the nature of much of the outdoors being so remote, means that this will not be a realistic strategy in many areas, but for certain very popular recreation sites, such as newly built greenways, it may be worth investing in this as an intervention strategy.

3.2 Treating wildlife, nature, farmland, and farm animals with respect

The behavioural challenge

Part of environmental responsibility while in the outdoors is respecting the surrounding nature, wildlife, farmland, and farm animals.. One of the most effective ways to do this is by keeping a respectful distance from animals and ensuring that the environment is left as close to its original state as possible. This includes avoiding interactions with wildlife and farm animals and refraining from taking natural objects such as flowers, wood, or rocks (Leave No Trace, n.d.). The growing number of recreational outdoor users in recent years has increased pressure on natural spaces, leading to disturbances in wildlife. This is partly due to the indirect effects of overcrowding but also results from a lack of awareness among some individuals who are new to the outdoors and may not fully understand the importance of respecting nature or how to do so.

'Respect wildlife' is one of Leave No Trace's seven principles. People may encounter wildlife in nature, either intentionally through activities that seek out wildlife or unintentionally while engaging in other activities. Either way, it is vital that they behave in a responsible way to avoid harming the wildlife or themselves. Approaching wildlife can cause 'visible changes in [their] behaviour' as well as imposing 'psychological' and 'physiological' costs on them which may be less visible (Bentall & Johnson, 2021, pp. 285-286). Ultimately, human disturbance can have consequences such as 'stress, separation of mothers and young, interference in parental care, habituation, [and] site abandonment' which can lead to 'ecosystem-wide consequences' (p. 285). Feeding animals can damage their health and alter their natural behaviour which can expose them to predators and other dangers (Leave No Trace, n.d.). The same is true for farm animals; disturbing them can cause serious consequences (which may be visible or invisible to recreational users), including causing them to miscarry.

As noted, a greater number of outdoor users inevitably leads to increased impact, but responsible behaviour can help mitigate this. Actions such as avoiding littering and staying on designated trails contribute to reducing environmental harm and protecting fragile ecosystems. Therefore, in addition to keeping a safe distance from wildlife (for the person and for the animals), outdoor users should also leave nature as they find it.

Inadvertently behaving irresponsibly

The causes of outdoor recreationists failing to behave respectfully towards wildlife, farm animals, nature, and farmland are the same as those for many of the irresponsible behaviours that occur - much of it is inadvertent and many users will not even be aware that they have caused harm; they are simply unaware and do not realise the (sometimes invisible) effect their actions have. For instance, a user may not keep a safe distance from wildlife or farm animals if they struggle to judge whether they are the recommended distance away from wildlife or not.

Disregarding responsible behaviour

Alternatively, some users' irresponsible behaviour will be conscious. They may be aware that they are closer than they should be or taking souvenirs of nature that they shouldn't but believe that doing so will have a negligible impact - not recognising the cumulative impact of thousands of individuals believing this. Individuals may witness other recreationists ignoring signage and performing irresponsible behaviours, and decide to follow this descriptive subjective norm.

Coexisting: The Role of Communications in Improving Attitudes towards Wildlife (Pang et al., 2021)

Pang et al. (2021) analyse the effectiveness of a city-wide communication campaign in New South Wales, Australia to raise awareness on how to protect the local Koala population. The campaign was executed through various channels, including print media, social media, and out-of-home advertising, such as billboards, bus backs, and bus shelters. Additionally, flyers and posters were distributed around the city center. The campaign messages used anthropomorphism and humour, such as referencing a popular TV show (The Bachelor/Bachelorette). The campaign was implemented during 'peak koala movement periods' when residents were most likely to encounter them. Example messages included:

- “Hi handsome. Meet our Bachelorette in paradise - look out for her on the roads”
- “Guess who’s having an affair at Redlands Coast - Let’s care for koalas - it’s breeding time”
- “Like you, I move house. Let’s care for koalas - they move about”

To measure changes in knowledge and attitudes towards koalas as a result of the campaign, survey respondents completed pre- and post-intervention questionnaires. Results showed that attitudes towards koalas improved positively, as did knowledge of how to protect them. Nearly half of respondents self-reported that they had made behavioural changes due to the campaign, such as driving slower and being more alert.



“Our bachelor in paradise” example messages (Pang et al., 2021)

Encouraging Safe Wildlife Viewing in National Parks: Effects of a Communication Campaign on Visitors' Behaviour (Abrams et al., 2020)

Abrams et al. (2020) combined insights from the theory of planned behaviour (TPB), community-based social marketing (CBSM) and risk communication to design persuasive messages to encourage safe wildlife viewing distances at four U.S. national parks. Messages were framed in terms of personal benefit to the visitor ('personal benefit messaging') rather than solely focusing on the benefits for wildlife. In this way, the messages would directly acknowledge the visitor's goals, while explaining the benefits of keeping a safe distance (e.g. to stay safe, to take in landscapes they don't see everyday). The signs also illustrated the safe distances using bus lengths to make it easier for visitors to judge, thereby increasing their perceived behavioural control to perform the behaviour. Additionally, the messages were light-hearted and humorous, for example 'sometimes the best relationship is a long-distance relationship' or 'distance makes the heart grow fonder'.

In addition to the physical signage, staff at national parks were 'trained to use key messages in interactions with visitors' and reminded to 'convey the benefits to the visitor of keeping the safe distance' (p. 259). Abrams et al. acknowledge that inter-human interactions are the most effective at creating responsible behaviour, but are often not feasible or practical in remote outdoor settings.



A great experience starts with a little distance.

There are few connections with nature that compare to visiting a national park. It has become easy to hide behind a camera, but often the images don't do justice to the beauty that you see when you live in the moment. We think a long-distance relationship with wildlife is the best kind of relationship because it allows you to stay safe, give animals the space they need, and take in the landscapes that you don't see every day.

"Sometimes the best relationship is a long-distance relationship" and "A great experience starts with a little distance." communication messages (Abrams et al., 2020)

Influencing park visitor behaviour: A belief-based approach (Hughes, Ham, & Brown, 2009)

Hughes, Ham, & Brown (2009) used belief elicitation studies to create two theory-based messages to be tested at two parks in Australia. They began by conducting workshops at each park with 15-25 parks managers and tour operators to identify the most problematic behaviour at each park. At the park in Victoria, feeding birds was identified as the most problematic behaviour as it was leading to 'increased bird aggression toward... visitors', 'negatively influenc[ing] the health of bird populations and reduc[ing] natural foraging behaviour' (p. 42). Thus, the identified target behaviour was for visitors to a designated picnic area to refrain from feeding the birds.

For the next phase - belief elicitation - the researchers observed visitors over the next six weekends and categorised them as either compilers (who didn't feed the birds) or non-compliers who did so intentionally. This created a sample of 50 compilers and 47 non-compliers who then completed belief elicitation questionnaires. The researchers compared the average responses of those who fed the birds and those who did not. This allowed them to understand how beliefs differed between the two groups. By identifying these differing beliefs, the researchers could determine which beliefs their communication efforts should target.

The belief elicitation process led the researchers to develop two message interventions (see below). In general, neither message led to a significant difference in compliance compared to the control. However, the messages did have a significant effect on the behaviour of first-time visitors (compared to repeat visitors). This highlighted the high resistance of habitual behaviours to messaging interventions.



“Badger Weir Birds – tame or wild? (Your choice matters)” and “How to ruin someone else’s picnic” messages (Hughes, Ham, & Brown, 2009)

Leave No Trace - Protect Our Dunes (2023)

Leave No Trace Ireland’s (2023) Protect Our Dunes campaign aimed to increase awareness of sand dune systems and their biodiversity, and of activities that can damage sand dunes (such as trampling on them, sliding down them, or camping on them). Therefore, the most responsible actions for individuals to take are to ‘stay off the dunes [by] keeping to designated pathways and the beach’ (p. 6). The 2023 campaign involved 15 visual assets which focused on solutions and actions people can take (i.e. utilising positive messaging). The campaign was run principally on social media. In total, it received 40,000 organic impressions on Leave No Trace’s social media platforms, reaching 14,000 people.



Protect our dunes campaign (Leave No Trace Ireland, 2023)

How a 'protected nature' sign keeps roadsides litter-free (Famo Valat, 2025)

The anonymity of roadside spaces can lead drivers' to feel a sense of detachment from them, decreasing their sense of responsibility to behave responsibly. As a consequence, littering is common in these areas with drivers throwing trash out their car window. Fama Volat, a Dutch creative agency, partnered with a local forester to reshape how drivers perceive these spaces. They implemented UNESCO-style signage identifying these as 'Protected Natural Areas'. Re-framing these areas as protected encourages motorists to respect and help preserve them by behaving responsibly. The signs have proven effective, leading to a more than 50% reduction in litter in the surrounding areas.



UNESCO-style 'Protected Natural Areas' signs along roadsides. (Famo Valat, 2025)

Summary of recommendations

Personalise and humanise messages and signs	Making efforts to personalise wildlife and farm animals can increase the amount of empathy that visitors feel towards them. The more familiar they feel, the more this is likely to cause humans to care about the impacts that their actions may have on them. This technique can even extend to anthropomorphism where animals are made to seem as human-like as possible. Pang et al. (2021) successfully use anthropomorphism to raise awareness for Koalas.
Inform and educate	When visitors show an insufficient respect for animals and wildlife it is generally a result of low knowledge or misconceptions about the harm their actions will cause, as opposed to deliberate malevolence. Therefore, it is vital that messages convey the correct responsible behaviour to recreationists and make it as simple as possible to understand. For example, communications may highlight the negative impact that certain actions can have on wildlife and nature, and how users can mitigate their behaviour to avoid this.
Appeal to positive emotions	Humans have an innate emotional connection with wildlife and thus messages that appeal to this intrinsic affinity are likely to increase intentions to treat wildlife with respect (Fernández-Llamazares et al., 2020).
Persuade	It is important to create messages based on an understanding of the salient beliefs that are preventing visitors from complying with the desired responsible behaviour in the first place. Additionally, messages should seek to convey the personal benefit of performing the responsible behaviour - how it can lead to an enhanced experience in the outdoors - as opposed to purely focusing on the benefits for wildlife or nature). It is noteworthy that visitors who perform a behaviour out of habit (for example, someone who frequently feeds wildlife or takes parts of nature away with them) may be more resistant to persuasive communications than infrequent or first-time visitors.
Make the responsible behaviour easier and more attractive	Some well-intentioned signs fall short because they do not provide the user with enough capability to perform the responsible behaviour. For example, the person may struggle to adhere to a request to maintain a 75 metre distance from wildlife if they cannot accurately perceive that distance in reality. Therefore, making requests easier to follow can help; for example, by displaying recommended distances in ways that are more perceptible, such as in bus lengths (Abrams et al., 2020). This increases perceived behavioural control, which in turn increases behavioural intention (Ajzen, 1991).

3.3 Keeping to paths and trails where possible

The behavioural challenge

Staying on paths and trails where possible is a critical component of responsible enjoyment of the outdoors that benefits both environmental conservation and visitor safety. Straying off-trail (e.g. walking and hiking, trail running, mountain biking) poses a particular challenge when it comes to balancing recreational users' positive and safe experience of the outdoors with ecological preservation. Going off paths and trails can lead to increased accidents, habitat degradation, as well as wildlife disturbances. Despite its importance, visitor compliance remains a key challenge worldwide (Goh, 2019; Goh, Ritchie & Wang, 2017; Saunders et al., 2019).

One of the primary reasons for encouraging visitors to stay on trails is to reduce safety risks. Off-trail walking increases the likelihood of accidents, such as getting lost or injured, and even fatalities in natural areas (Goh, 2019). Visitors unfamiliar with the terrain may inadvertently place themselves in hazardous situations, leading to misadventures that then require costly rescue operations.

From an environmental perspective, the expansion and improper use of trails significantly affects natural areas. As demand for hiking and recreational activities grows, so does the creation of unofficial trails, which fragment habitats and degrade natural landscapes (Bradford & McIntyre, 2007). The construction and use of trails can lead to physical, ecological, and aesthetic damage, making sustainable trail management crucial (Lynn & Brown, 2003). Frequent foot traffic compacts soil, hindering vegetation recovery and exacerbating erosion (Johnson & Vande Kamp, 1996). Furthermore, the spread of invasive plant species is facilitated by soil disturbance and human-induced seed transfer (Cole, 2002). Social trails, created informally by repeated visitor use, are particularly problematic as they become self-reinforcing — once formed, they attract more visitors, leading to permanent ecological disruption (Cole, 2002).

Last but not least, human presence in natural areas can have profound effects on wildlife behaviour and survival. Off-trail recreation increases unpredictability for wildlife, making it harder for animals to adapt to human disturbance (Miller et al., 2001). Research has shown that wildlife exhibit greater flushing and vigilance distances when humans move off established trails (Taylor et al., 2003). In some cases, repeated disturbances can even lead to reduced reproduction rates and long-term population decline (Larson et al., 2016; Tablado et al., 2015).

The role of attitudes and values

Individuals with a strong conservation ethic or pro-environmental values tend to follow trail guidelines, as they understand the negative impact of off-trail travel on vegetation and wildlife (Kopp & Coppes, 2020). The Theory of Planned Behavior suggests that attitudes toward conservation shape behavioural intentions, with positive attitudes leading to greater compliance with trail rules (Goh, 2023). Conversely, visitors with a weaker environmental concern perceive trail rules as unnecessary restrictions rather than essential conservation measures (Park et al., 2022). Research has also found that visitors who value personal convenience or efficiency — such as choosing shorter routes — are more likely to leave the trail, particularly when the perceived benefits outweigh their environmental considerations (Schwartz et al., 2018).

Normative influence and social proof resulting in social trails

Social influence plays a crucial role in off-trail behaviour, as individuals are likely to follow the actions of others, especially in ambiguous situations. Studies show that when visitors observe others going off-trail, they are more inclined to do the same, assuming that the behaviour is acceptable or even encouraged (Goh, 2023). This phenomenon, known as social proof, contributes to the creation of informal or "social trails," which develop through repeated use by visitors who assume they are legitimate – or at least harmless and safe – paths (Kopp & Coppes, 2020). The visibility of these unauthorised trails reinforces off-trail travel, as future visitors mistakenly interpret them as established routes rather than indicators of rule-breaking behaviour (Park et al., 2022).

Desire for freedom and exploration

The sense of freedom and personal exploration is a core motivator for off-trail travel, particularly in outdoor areas visitors go to to seek solitude, exploration and adventure. Many visitors view trails as restrictive and prefer to forge their own paths, often believing that their individual impact is minimal (Kopp & Coppes, 2020). This motivation is often linked to reactance theory, which suggests that individuals resist rules they perceive as limiting their autonomy (Goh, 2023). For some, venturing off-trail is part of the "authentic outdoor experience," particularly for adventure-seekers who prioritise spontaneity over adherence to regulations (Schwartz et al., 2018).

Poor trail design and maintenance, lack of satisfaction with infrastructure

Poorly maintained or unattractive trails often push visitors to seek alternative routes, leading to increased off-trail travel. Research suggests that dissatisfaction with infrastructure – such as muddy trails, erosion, or poorly designed paths – is a primary factor behind undesignated trail use (Kopp & Coppes, 2020). Trails that are difficult to navigate or that lack clear directional markers can also lead to unintentional off-trail travel, as visitors attempt to find a more efficient or enjoyable route (Schwartz et al., 2018). Studies in Acadia National Park (USA) found that when infrastructure was improved with clearer signage, maintained pathways, and designated viewing areas, compliance significantly increased (Park et al., 2022).

Lack of awareness or understanding

Many visitors leave paths and trails due to a simple lack of awareness about the environmental damage their actions can cause. Studies show that while some visitors knowingly disregard trail rules, a large percentage do so accidentally due to insufficient signage or misinterpretation of paths (Schwartz et al., 2018). Moreover, some assume that off-trail travel is harmless if done carefully, failing to recognise the cumulative impact of repeated trampling on vegetation, soil, and wildlife habitats (Park et al., 2022). Research conducted at Port Campbell National Park in Australia found that most visitors could not recall specific rules about staying on trails, indicating that educational messaging was either ineffective or not widely noticed (Beeton et al., 2005).

Ineffective or lack of enforcement

The absence of strong enforcement measures can contribute to higher rates of off-trail travel, as visitors often perceive minimal consequences for noncompliance. Studies from the USA show that in areas where rangers actively patrol and provide on-the-spot education, visitors are far more likely to adhere to trail rules (Park et al., 2022). However, many outdoor areas have limited resources, making direct enforcement challenging. Additionally, punitive approaches, such as fines, can sometimes generate resentment among visitors, leading to intentional defiance (Goh, 2023).

Mitigating Undesignated Trail Use: The Efficacy of Messaging and Direct Site Management Actions in an Urban-Proximate Open Space Context (Schwartz et al., 2018)

In collaboration with the City of Boulder (USA), Schwartz and colleagues (2018) tested the effectiveness of different management strategies in reducing undesigned trail use in Boulder's Open Space and Mountain Parks. The study applied the Theory of Planned Behavior framework, utilised Leave No Trace messaging, and involved the observation of 2,232 visitors and the analysis of 147 survey responses. They compared two educational messages, a physical barrier, and a combination of both against a control condition with no intervention. When no intervention was present, 91.4% of visitors stayed on designated trails. A sign with an ecological appeal ('Stay on designated trails: even when wet and muddy, to protect trailside plants and minimize erosion') increased compliance to 93.9%. The physical barrier alone was slightly more effective, with 94.2% of visitors staying on the designated path. However, the most effective approach combined the barrier with an educational message, raising compliance to 96.8% – a statistically significant reduction in undesigned trail use. These findings highlight the value of combining direct (barrier) and indirect (messaging) management interventions to influence visitor behaviour.



Treatment conditions (Schwartz et al., 2018)

Contextual analysis for applying persuasive communication theory to managing visitor behaviour (Beeton et al., 2005)

Beeton, Weiler, and Ham (2005) conducted a study at Port Campbell National Park, Australia to explore how persuasive communication theory can encourage visitors to stay on designated tracks. They assessed existing signage using the Theory of Planned Behaviour and surveyed visitors to identify key beliefs influencing their decisions. While most visitors understood the environmental and safety benefits of staying on the track, existing messages primarily reinforced already-held beliefs rather than addressing other factors that drive off-track behaviour. For example, signs stating "Protect fragile vegetation – Stay on the track" or "Unstable cliffs – Stay back" repeated what visitors already knew, making them less likely to influence behaviour. Many visitors strayed for reasons unrelated to environmental concern, such as seeking better photo opportunities or being unaware they had left the designated path. Since existing messages failed to address these overlooked influences, the study highlighted the need for more engaging and targeted communication. Messages such as "Most visitors respect the track – Do you?" could leverage social norms, while clearer signage and physical barriers could make staying on designated paths the easier default choice. By shifting focus beyond awareness alone, more effective strategies could improve compliance and protect park ecosystems.

Efficacy of Combining Education and Site Management in Reducing Off-Trail Travel in a Fragile Biotic Community (Park et al. 2022)

Park, Marion, and Wimpey (2022) tested the effectiveness of different site management and educational interventions in reducing off-trail travel at Acadia National Park, USA. They compared various treatments, including additional trail blazes, educational signs, spaced coping stones, low scree walls, low fencing, and an integrated approach combining multiple tactics, against a control condition. Under control conditions, 49.9% of visitors strayed off-trail within 2 meters of the designated path. Educational signs alone reduced off-trail travel to 31.6%, while a low screen wall reduced it further to 21.7%. The most effective intervention was low fencing, which reduced off-trail travel to just 11.1%. The results highlight that direct, physical site management measures, particularly low fencing, were the most effective at curbing off-trail behavior, whereas educational messaging, while helpful, had a more modest impact.



Educational and site management interventions (Park et al., 2022)

Off the Beaten Track (Bradford and McIntyre, 2007)

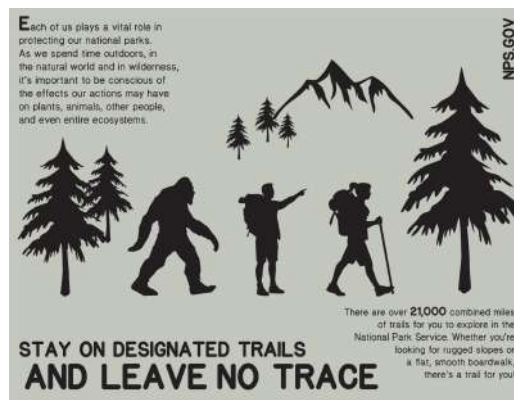
Bradford and McIntyre (2007) tested the effectiveness of different message types and sign placements in reducing social trail use at St. Lawrence Islands National Park, Canada. They compared a plea message ("Please stay on the wood-chipped trails") with an attribution message ("Your feet have trampled the vegetation on this island. Please stay on the main wood-chipped trail") and placed signs either at park entry points or directly at social trailheads. Without any signs, 88.3% of visitors used social trails. A plea message at entry points had little effect (1.8% reduction), but when placed at trailheads, it reduced social trail use by 23.6%. The attribution message was significantly more effective, reducing social trail use by 35.9% at entry points and 43.7% at trailheads. The results suggest that messages encouraging personal responsibility, particularly when placed at the point of decision, are an effective and low-cost strategy for reducing visitor impact.



Example of a message placed at social trails (Bradford and McIntyre, 2007)

Stay on designated trail and leave no trace (National Park Services, USA)

Developed by the National Park Service (US Department of the Interior) in 2019, this sign can be freely used on webpages, social media, or as a poster to promote Leave No Trace principles and trail safety in parks. It highlights the combined range of trails available for recreational use, as well as the vital role each visitor (including mythical creatures like Bigfoot) place in protecting the outdoors. The effectiveness of this poster has not yet been evaluated.



Stay on designated trail and leave no trace poster example

Summary of recommendations

Inform and educate	Some visitors knowingly leave trails, whether out of curiosity, a sense of adventure, or a belief that their impact is minimal. Others stray unintentionally due to inadequate signage, poorly defined paths, or a lack of awareness about the ecological consequences. By assessing where off-trail behaviour falls on this spectrum – whether intentional, accidental, or somewhere in between – more effective interventions can be developed (Kopp & Coppes, 2020). If a significant number of visitors go off-trail unintentionally, improving wayfinding and signage may be the most effective solution. If visitors are knowingly veering off designated paths, targeted messaging, persuasive techniques, or physical nudges may be needed to encourage responsible behaviour. Additionally, providing accessible educational resources can help visitors make informed decisions. This could include on-site information boards explaining the ecological impact of off-trail travel, guided tours that highlight the importance of staying on designated paths, or digital resources such as websites and apps offering guidance before visitors even arrive.
Persuade	Persuasive communication techniques are widely used to influence visitor behaviour (Cialdini, 2003; Winter et al., 2000). Research suggests that positively framed, injunctive messages – reinforcing behaviours that align with conservation goals – are particularly effective in the absence of enforceable regulations (Bradford and McIntyre, 2007). Messages that highlight ecological concerns, such as the protection of fragile habitats or vulnerable species, can further enhance compliance.
Personalise and humanise messages and signs	Connecting visitors to the local environment on a personal level can foster a stronger sense of responsibility. For example, a sign might say, “You’re walking through the home of endangered ground-nesting birds – please stay on the path to protect them”. Messages could frame the ecosystem as a host welcoming visitors to their “home,” encouraging a sense of care and respect by fostering a sense of stewardship.
Promote planning ahead	Visitors who plan their routes in advance are less likely to stray from trails. Providing clear and concise information early in the trip-planning process is essential (Cole et al., 1997; Ham and Krumpe, 1996). Digital tools such as apps and maps at trailheads can help visitors select appropriate routes based on trail length, difficulty, and weather conditions. Location tracking features of apps can also notify users when they venture off designated paths, reinforcing responsible trail use in real time.

Change choice architecture

The effectiveness of messages depends significantly on their location. Research shows that interventions placed at or near the decision point – where the desired behavior should occur – are more successful than those in general locations (Hockett and Hall, 2007; McCool and Cole, 2000). Bradford and McIntyre (2007) found that signs positioned directly at unauthorised trail intersections were far more effective in reducing off-trail travel than signs placed at an entry-point kiosk. To maximise impact, install clear, visually engaging signs at trailheads and along paths, using positive and encouraging language to reinforce the importance of staying on designated trails.

Subtle environmental modifications can help direct visitors toward designated trails. Physical nudges such as low barriers, scree walls, or natural obstacles can make official paths the most intuitive and accessible choice, reducing the likelihood of off-trail travel without the need for restrictive enforcement. These design elements should blend naturally with the landscape while gently steering visitors toward the intended routes.

Make the responsible behaviour easier and more attractive

People are more likely to stay on trails when they are well-maintained, clearly marked, and enjoyable to use. Ensuring that official trails are the most attractive and accessible option can reduce the temptation to explore alternative routes. Regular maintenance, the strategic placement of wayfinding markers, and the addition of features such as viewing platforms, rest stops, or interpretive signs can enhance the appeal of designated trails. The mindset of “exploring and seeking adventure” could be counteracted by promoting designated routes as exciting and rewarding, incorporating scenic viewpoints and well-maintained infrastructure that aligns with visitors’ desire for exploration while keeping them on the correct path (Park et al., 2022).

Model the desired behaviour

Modelling the desired behaviour through cultural references can make it more engaging. Drawing on Ireland’s rich folklore, for example, messaging could reference mythical figures leaving no footprints behind to illustrate the importance of staying on trails. Playful yet memorable narratives can encourage visitors to emulate low-impact behaviours in a way that resonates with them.

Dog-related responsible behaviours



Dog walking is a popular outdoor activity, with at least 25% of households in Ireland owning a dog (More et al., 2022). Dog walkers are considered some of the countryside's most frequent visitors, and many locals choose to own a dog, inspired by the benefits their environment offers for walking. While dog walking can have a series of physical, psychological and social benefits, dogs and their owners often also engage in unwanted behaviours. Broadly speaking, these unwanted behaviours can be categorised into 1) owners not disposing of dog waste appropriately, and 2) those resulting from dogs being off-lead and out of their owner's control.

Consequences of irresponsible behaviour

Failing to pick up dog waste can lead to spread of disease, and in an unpleasant experience of other site users (e.g. children or wheelchair users) treading in it. Similarly, picking up waste but not disposing of it in bins may pose damage to the environment (as bags are not biodegradable) and it also carries additional costs of clearing up to others (Edwards & Knight, 2006).

Owners letting their dogs roam off lead poses dangers to wildlife, farm animals and the dogs themselves. Dogs may end up chasing wildlife into roads, separate mother from their young or cause animals to die from shock. Dogs can also disturb ground nesting birds, damage flora, local ecosystems and habitats or food for animals and insects. Lastly, dogs off lead might scare other visitors of the outdoors, including children.

The special relationship between owners and their dogs

As the saying goes, dogs are “man's best friend”. Certainly, most owners have a unique and special relationship with their dog. Associated with physical, psychological and social benefits, the intensity of this relationship impacts on how dog walkers interact with and relate to their dogs, people and the environment. The preferences and needs of dogs influence where people choose to walk; favourite sites are those where dogs are perceived as most happy – where they are permitted to run off lead, where they can socialise with other dogs (Edwards & Knight, 2006).

This special relationship, however, can exacerbate certain biases, leading to irresponsible behaviour. Exceptionalism bias is the most salient, with owners mistakenly believing that their dog is ‘exceptional’ and should be treated as such. A related bias is ‘optimism bias’, where owners are overconfident about either their ability to control their dog (e.g. overestimating their ability to call their off-lead dog back to them) or their dog's good behaviour (e.g. wrongfully believing they would never cause any harm). These two biases frequently interact, resulting in dog owners having differing opinions on the behaviours that other dog owners should perform than those they have for themselves. For example, a survey of dog walkers in Australia found that whilst 77% agreed with rules and regulations, such as limiting when dogs are allowed on beaches and keeping dogs on a lead, only 29% complied with such regulations themselves (Guinness et al., 2020).

Social influences on owners' behaviour

Beyond the psychological relationship between owners and their dogs, social norms among dog walkers also play a significant role in shaping responsible outdoor behaviour. Many dog owners perceive themselves as part of a broader dog-walking community, with shared values and unwritten rules. Walking in areas where other dogs are present provides not only social enrichment for their pets but also a sense of camaraderie and safety for the owners themselves. Within these groups, certain behaviours — such as allowing dogs to roam off-lead — may become socially reinforced, especially if others are engaging in the same practice. In contrast, in areas where leashing is the norm, dog owners are more likely to comply due to social pressure and a desire

to fit in. In spaces where leash rules are loosely followed or rarely enforced, owners may feel justified in letting their dogs run free, believing their behaviour aligns with what is commonly accepted.

The relationship between dog owners and landowners or site managers further influences compliance, if they perceive that these authorities as overly restrictive or ‘anti-dog.’ This perception can create resistance to rules, particularly if they feel regulations are unfairly imposed or do not account for their dog’s needs.

Ultimately, fostering responsible dog ownership in outdoor spaces requires both individual awareness and collective responsibility. While many owners deeply care for their pets and want the best for them, this should not come at the expense of wildlife, farm animals, or other visitors. The following sections provide a deeper analysis of the key barriers and factors influencing these two issues; dog waste disposal and off-lead roaming. Through case studies and insights from the literature conducted, these sections will explore the underlying motivations and challenges that shape dog owners’ behaviour, as well as practical recommendations and interventions to encourage more responsible enjoyment of the outdoors with dogs.

4.1 Disposing of dog waste correctly

The behavioural challenge

Dog fouling is not only unpleasant, but it is also dangerous for humans and animals alike. While the amount of dog waste left in the outdoors is hard to estimate, researchers from University College Dublin (UCD) picked up over two kilograms of faeces at beaches in south and north Dublin daily (Meijer, 2021). In the United Kingdom (UK), it has been estimated that dogs produce more than 1,000 tons of faeces every day (Campbell, 2007), much of which is deposited in public areas (Wells, 2006). Even 2 kgs of faeces contain over 88 billion *E. coli* bacteria, which easily leak into natural waters as well as sewages and get transmitted to people, wildlife, and other pets. In humans, *E. coli* can cause cramps, diarrhea, intestinal illness or kidney disorders, while the larvae of parasites like roundworms can cause loss of vision. These hazards are especially risky for children playing outside, visitors in wheelchairs who may have increased contact with dog waste, and blind and visually impaired people who are unable to see it and avoid it. According to a 2024 survey by Vision Ireland, this problem means that “someone who is blind or vision impaired can't store their cane in their bag until it's cleaned” (RTÉ News, 2024).

Dog waste contains high levels of nitrogen and phosphorus and when they filter into bodies of water, these elements act as fertilisers for aquatic plants like algae. As these plants decay they consume oxygen that fish and other aquatic life need to survive (Hobbie et al., 2017). Research also indicates a connection between the spread of farm animal diseases, such as bovine neosporosis, and the contamination of agricultural land with faeces from infected dogs (Innes et al., 2007). Pathogens from dog waste could also threaten the safety of food grown on local farms or the drinking water supplies of landowners. Additionally, Atenstaedt and Jones (2011, p. 91) acknowledge that “dog fouling can have a significant economic impact by deterring inward investment and tourism” in a given area. This can present significant barriers to the efforts of promoting enjoyment and local tourism to the outdoors.

Lastly, it is important to mention that the correct handling of dog waste involves picking it up and disposing of it, either in designated bins outdoors where available, or at home. Some studies suggest that “bagged” dog waste has a potentially even greater environmental and aesthetic impact than uncollected dog waste (Lowe et al., 2014). While dog waste can technically be composted at high temperatures (which most backyard compost systems rarely reach), or buried (in which pathogens and parasites establish themselves in the soil), the simplest and most recommended method is disposing of it in bins; landfills are designed to handle pet waste. Using bags made out of recycled plastic is another good recommendation because once in a landfill, neither biodegradable nor regular plastic will break down.

Regulation in Ireland

In Ireland, the responsibility for managing and enforcing littering offences – which dog fouling falls under – lies with local authorities. Owners who fail to clean up after their dogs face on-the-spot fines of €150, escalating to €3,000 upon conviction for non-payment. Each local authority determines its own strategies for addressing dog fouling, which typically encompass a combination of public awareness campaigns, enforcement measures, and clean-up operations tailored to local needs.

Despite these provisions, enforcement appears inconsistent across the country. In 2023, local councils issued only 46 fines for dog fouling, averaging approximately 1.5 fines per authority. Notably, Kerry County Council issued the highest number of fines in 2023, with a total of 13, followed by Dublin City Council with 8, and both Cork County and Fingal councils with 6 each (Daly, 2024).

Dog owner typology and the beliefs of self

Generally speaking, all dog owners agree that picking up dog waste is the right thing to do, because it is their responsibility (Edwards & Knight, 2006; Lowe et al., 2014). Picking up dog waste is considered an essential part of owning a dog, and is an “unwritten rule”, everyone should follow. However, Edwards & Knight (2006) discovered a discrepancy between self-reported and observed responsible behaviour. Study participants generally agreed that there should be some flexibility to these rules, as it is not always practical to pick up after their dogs, for example, when a dog defecates unnoticed, the faeces cannot be found, or they are unreachable.

Dog owners often also intentionally turn a blind eye to their dogs defecating, either through “active non-knowledge” (e.g. looking away while the dog defecates or looking at one’s phone) or “passive non-knowledge” (e.g., “forgetfulness or indifference to poop”) (Gross and Horta 2016). Essentially, dog owners are presented with a choice: they either behave in a cooperative (responsible, and pro-environmental) manner by removing dog waste, or they engage in defective behaviour (just walking on). The behavioural outcome becomes a result of the interaction between “internalised constraints held by the individual, the particular situation and context in which they are making a decision to pick up” (Webley and Siviter, 2000).

Internalised constraints reflect strongly on the way dog owners view themselves with regards to the acceptable and responsible way to behave with dogs’ mess. The study conducted in the UK by Lowe and colleagues (2014) categorised dog walkers into the following five behavioural typologies:

1. **"Proud to Pick Up"** – Will always pick up and dispose of waste correctly.
2. **"It's the Right Thing to Do"** – Will pick up but prioritise convenience when disposing.
3. **"I Have Done My Job..."** – Picks up but discards bagged waste if bins are unavailable.
4. **"Only If I Have To"** – Picks up only when others are watching and may discard later.
5. **"Disengaged"** – Never picks up, even if aware of environmental consequences.

The typology a dog owner belongs to, or how positively they view themselves is reflected on how they view others. Dog walkers who did not pick up after their dogs were viewed negatively by owners who followed the unwritten rules and saw themselves positively. These rule-following owners also expressed disdain for those who bagged their dog's waste but did not dispose of it properly, according to Edwards & Knight (2006).

Situational factors and the availability of bins

Regarding the situational context of the behaviour, in Lowe and colleagues' study (2014), 98% of survey respondents strongly agreed that owners should always pick up waste on street pavements, however, this number dropped to 56% in all locations. What's more, 34% strongly disagreed that dog fouling should be picked up in open countryside, and 45% opposed picking up in farmland grazed by farm animals. In the 2014 study conducted by Edwards & Knight, participants also admitted to not picking up if their dog defecated, where people were unlikely to tread, such as in natural areas.

The availability of bins is also frequently mentioned as a determinant of not picking up dog waste (Gross and Horta, 2016), and more importantly, is cited as the primary determinant for discarding bagged dog waste in the environment (Lowe et al., 2014). “Lack of dog waste bins” scored an importance score of 3.97 (on a scale of 5, 6 being very important), while some respondents even admitted they would leave the bagged waste in a prominent place or in undergrowth (Lowe et al., 2014). A national online survey and a site survey conducted in South Hampshire, England, found that a fifth of respondents had bagged dog faeces but not placed them in a bin. Stated reasons for this irresponsible behaviour included forgetfulness, changes to the routine, and even

doing it as an act of protest (e.g., against a lack of dog waste bins) (SIRC, 2008). While the availability of bins certainly plays a significant role, Edwards and Knight (2006) found that dog walkers – while they appreciate sites with bins – do not avoid particular areas due to a lack of bins. Other issues cited regarding bins included their number, their location, how often they were emptied, and uncertainty about placing bagged dog faeces in general litter bins (Edwards & Knight, 2006; Lowe et al., 2014).

Reluctance to carry waste

When considering the determinant of not disposing of bagged waste in bins, the most significant factors appear to be a reluctance to take it home or in cars (mean = 3.60) and visibility. This is highlighted by the fact that in Lowe and colleagues' (2014) path audits, bags were often discarded in transitional areas such as exits, gaps in walls, or behind fences, where owners were less likely to be seen. For example, in the path audit at Turton and Entwistle Reservoir, 269 bags were found in a 1000m section, with the highest concentration within 300m of the main car park, indicating that many owners picked up waste but discarded it near their exit point. Embarrassment about carrying dog waste bags had a low impact (mean = 2.47).

Encouragingly, dog owners tend to agree, that if their dog defecates in an area where people might tread, they usually take the bagged waste home with them. Furthermore, – although the “threat or fines of prosecution” – appears to only be a moderate deterrent (m = 3.29 on a scale of 5), almost all dog owners are aware of penalties and agree that if they were caught not picking up after their dog, penalties should apply (Edwards & Knight, 2006; Lowe et al., 2014).

The findings of the study by Lowe and colleagues (2014) also directly challenge the idea that fines alone can effectively change behaviour, as the primary motivation for responsible dog ownership appears to be an internalised social norm rather than legal deterrence. In other words, having witnesses to dogs defecating in public spaces can put social pressure on dog owners to pick up after their dogs (Gross and Horta, 2016). Social norms are particularly relevant in this context, as people may be influenced by the behaviour of others, expecting reciprocity for their own compliance (Farrow, Grolleau, and Ibanez, 2017). However, individual differences also play a role, as those who are community-oriented may be more likely to comply with rules, even when it conflicts with their self-interest, compared to those who are more individualistic (Webley and Siviter, 2000). The impact of social conformity is evident in the visibility of areas with high dog fouling rates. Path audits revealed that parks with frequent bin placement had the lowest fouling rates, while paths with lower visibility, had the highest non-bagged dog waste occurrence (peaking at 40 faeces per 25-metre section) (Lowe et al., 2014). In contrast, paths with high visibility had very low fouling despite having no bins, suggesting that social surveillance discourages non-compliance (Lowe et al., 2014). In the same study, some participants also admitted that they only picked up waste when others were watching, suggesting social pressure rather than internal motivation.

Motivators to pick up waste

Lastly, on a positive note, when it comes to the main motivations to pick up dog waste, the primary reason appears to be because it is simply “the right thing to do” (m = 4.66). Nevertheless, awareness of health risks also plays a role in “reducing the spread of disease” (mean = 4.38) and concern about the parasite *Toxocara canis* (mean = 4.33) ranking highly (Lowe, et al., 2014). Other studies also cite the perceived benefits of not stepping in dog waste; the aesthetic appeal of public areas without dog waste; conforming to social/moral norms (i.e. it is courteous); avoiding the smell; health reasons (i.e. effects of bacteria); and creating a pollution free environment as the top motivation (Typhina & Yan, 2014). In contrast, fear of confrontation was a weaker factor, with concerns about being confronted by the public (mean = 2.80) and by other dog owners (mean = 2.79) scoring lower.

Dog waste is a common issue for many communities, and many approaches have been used to address it. Visible enforcement – in the form of fixed penalty notices (FPN) – are commonly used, often as part of the solution. Most countries operate some form of penalty for dog fouling, and in some cases (e.g. Amsterdam or Daventry, Northamptonshire), on-the-spot fines can be issued even for not carrying any form of dog waste bag. While increased enforcement can certainly have a positive impact and be an effective deterrent, it is unlikely to lead to long-term behaviour change or be financially sustainable for local authorities (Keep Wales Tidy, 2016). This is also supported by the findings of Lowe and colleagues (2014), showing that enforcement does not appear to be a dominant factor in changing behaviour, and issuing FPNs for dog fouling is generally low.

The installation of additional bins and/or dog waste bag dispensers is another common intervention used to make the responsible behaviour harder to avoid. Removing the excuse of not having available facilities – where feasible – can be a helpful contribution to behaviour change.

Last but not least, awareness campaigns in the form of signs and posters often complement the above two measures or are used as the sole intervention to highlight the issue, inform and educate dog owners of the responsible behaviour. Innovative interventions tailored to the specific needs and circumstances of local communities and contexts generally yield the best results (Keep Wales Tidy, 2016).

Despite the number of attempts to solve the issue, interventions are typically implemented without measuring and assessing their impact. A systematic review by Stenstaedt and Jones (2011) identified a range of published and unpublished materials across six major databases, and 47 additional databases and websites. However, out of the 68 articles describing interventions to prevent dog fouling, none met the inclusion criteria of being part of a controlled trial or observational study.

Below, we focus on the awareness campaigns as the most versatile and cost-effective intervention type, highlighting the most common message types and behavioural principles they leverage.

“There’s no such thing as the dog poo fairy” (UK)

Humorous campaigns like “There's no such thing as a dog poop fairy” emphasise that dog owners are responsible for cleaning up after their pets, reminding them that no one else – such as their dog or a mythical “poop fairy” – will do it for them.

This campaign launched by Keep Britain Tidy in 2010 highlights the owners’ responsibility in correctly disposing of dog waste – in any bin – in a light-hearted manner. The subtitle was added, as research had found that four out of five people didn’t know that dog bags could be thrown in any bin. The campaign was backed by 96 councils across the UK, and has led to a 43% reduction in dog fouling across the country, according to a pre-post evaluation (The Drum, 2010). Multiple other councils and cities across the world have since adopted the campaign. An evaluation involving 502 participants of the campaign’s effectiveness in Albuquerque, New Mexico found that the campaign was successful based on its reach (almost 70% of respondents had seen the sign) and its influence on self-reported pickup frequency (50% of dog owners reported increased pickup frequency of dog waste after seeing the sign) (Scruggs et al., 2021).



Iterations of the original “There’s no such thing as a dog poo fairy” campaign launched nationwide by Keep Britain Tidy (2010), Hurunui District Council, New Zealand (2020), and Bernalillo County, USA (2021).



Similar message idea, highlighting the dog’s inability to pick it up after themselves. New York City, USA (2023)

“We’re Watching You” (UK)

Based on the insight that owners are less likely to pick up after their dogs when they feel they aren’t being watched, during night time and in areas they are not overlooked, in 2013 Keep Britain Tidy launched an eye-catching campaign featuring posters of glow in the dark eyes to remind dog owners that they are in fact, always being watched. The campaign partnered with 17 local land managers and involved displaying four different poster versions at eight target sites per partner, which were monitored three weeks before and three weeks during the display of the posters. The campaign was a great success, as the average change in incidents of dog fouling (taking both increases and decreases into account) was a 46% decrease per site. Of the four versions of poster, the positive reinforcement message was the most effective in decreasing incidents of dog fouling across the target and displacement sites (49% reduction overall), however the differences in reductions across the four versions (ranging from 43% to 49%) did not reach statistical significance (Keep Britain Tidy, 2013).



“We’re watching you!” campaign by Keep Britain Tidy, UK (2013)

“What are the Yellow Flags?” (Washington, USA)

The following strategy focuses on emphasising the severity of the issue, by increasing the visibility of dog waste. Using brightly colored survey flags and signage, the City of Kirkland marked all locations of un-scooped dog waste in two City parks over the course of three weeks. The intervention involved a visible display of 10 signs (300+ flags) paired with targeted email, direct mail and social media outreach efforts, as well as six new pet waste bag dispensers. All direct mail, social media, booth outreach, and press releases directed audiences to an online Super Scooper pledge where participants pledged to always pick up after their pets. Those who completed the pledge were mailed a free on-leash dog bag dispenser and roll of refill bags. These combined efforts led to an 80% reduction in un-scooped dog waste lasting at least two months after outreach efforts had ceased. In a follow up survey with Super Scooper pledge participants, 94% of respondents reported picking up their dog’s waste every time while on walks (City of Kirkland Public Works, 2020).



The 2015 “Orange Poo” campaign in Oregon, USA, employed a similar – though less complex – intervention strategy to emphasise the amount of uncollected waste in the area and its detrimental environmental effects. Dog waste along a local forest trail was spray-painted orange to draw attention to the issue (Brutell, 2015).



“Orange Poo” campaign Oregon, USA (2015)

“Children will put anything in their mouths” (Bristol, UK)

The “shock factor” is a strategy that relies on provocative or unsettling imagery to grab attention and drive behaviour change. In 2013, Bristol City Council used this approach in a controversial campaign, featuring a poster of a toddler appearing to eat dog faeces. The goal was to startle and disgust dog owners into recognising the serious health consequences of not picking up after their pets. The shock factor was complemented by a high fixed penalty notice of £1000 and a call to action to even report those who don’t pick up. While such tactics can be highly effective in raising awareness, they also risk backlash for being too extreme or upsetting.



“Children will put anything in their mouths” Bristol, UK (2013)

“Help Scally be a good boy!” (Ireland)

The responsibility (and guilt) strategy are also commonly used in dog fouling awareness campaigns to encourage dog owners to clean up after their pets. Several Irish councils, including Galway, Fingal, and South Dublin, have employed this approach through a character-driven series of videos and simple slogans like "Bag It, Bin It". For example, Louth County Council's "Help Scally Be a Good Boy!" campaign personifies an adorable dog named Scally, shifting the responsibility onto owners to ensure their pets don't contribute to littering (McCabe, 2022). By appealing to emotions like accountability, guilt, and community pride, these campaigns aim to influence behaviour in a more personal and relatable way.



"Help Scally be a good boy" campaign, Ireland (2022)

"Proud of you (for picking up my poo)" (Jersey)

The positive reinforcement strategy uses a lighthearted and encouraging approach to motivate owners to clean up after their dogs. Jersey's "Proud of You" campaign, featuring the cartoon dog "Eric", speaks to owners in an encouraging way to pick up after their dogs and stop breaking the law (gov.je, 2015). As part of the campaign, the government also distributed pin badges, poo bags and posters at parish halls, vet practices, pet shops and some schools.

A similar campaign by Fingal County Council features the slogan "Make Your Dog Proud of You" and flips traditional roles, with dogs expressing approval when their owners do the right thing. Fingal's posters even add a humorous twist, featuring dogs telling owners "Who's a good boy?" and similar phrases typically directed at pets. By using humor and encouragement rather than guilt or shock, these campaigns foster a sense of pride in responsible behaviour, making it feel like a rewarding choice.



"Proud of you for picking up my poo" campaign, Jersey (2015) and "Make your dog proud" campaign, Fingal County, Ireland

Similar in its use of the “positive reinforcement” behavioural technique, “The big scoop” campaign created for Dogs Trust and published in the UK in 2016 features dogs in a heart shape looking appreciatively at their owners and slogans like “You take my poop away” or “Love at first scoop”. Additionally, the campaign integrates positive social norms by highlighting that “86% of owners are always happy to scoop”, subtly encouraging compliance by emphasizing that responsible behavior is the norm. By framing dog waste disposal as a caring, socially accepted action, “The Big Scoop” (Dogs Trust, 2016) fosters a sense of collective responsibility while reinforcing the bond between owners and their pets.



“The Big Scoop” campaign created by TMW for Dogs Trust, UK (2016)

“Walk this way”, UK (2017)

The “Walk This Way” campaign, a collaboration between Dogs Trust and Keep Britain Tidy, was initially piloted in 2017 across five popular dog-walking routes in England and one in Wales (Keep Wales Tidy, 2016). The initiative involved placing additional general waste bins and clearer signage to guide dog owners toward proper waste disposal by making it easier and more intuitive for owners to locate and use bins. Inspired by successful litter-reduction techniques, the campaign combined signage in key areas with chalk-based spray messaging, creating a visual trail that nudges people toward proper disposal points. Following the pilot’s success, the campaign was extended in 2018 to further promote responsible dog ownership and reduce dog fouling in public areas.



“Walk this way” campaign, UK (2017)

Summary of recommendations

Appeal to positive emotions

Frame messages in a positive tone, such as that responsible behaviour as something to be proud of — both for owners and their dogs — to further encourage compliance.

Personalise and humanise messages and signs

Using first-person messaging from the perspective of wildlife — e.g., “I live here too — please keep my home clean” (signed, The Fox)— could add a more personal touch, making the impact of dog fouling feel more real.

Inform and educate

In locations where bins are not available or not feasible (or only available at the trailhead or parking), clear signage should acknowledge the absence of bins. Dog owners should be encouraged to carry waste home, for exact strategies see below in the “Make the responsible behaviour easier” section.

Change the choice architecture

In areas where bins are available, especially at trailheads or parking areas, signage should remind dog owners to “Bag it, bin it, or take it home!” Even if bins are available, the signage should include the option of “taking it home”, as otherwise in locations where bins are not available, dog owners may not know how to behave responsibly. Place signs on, or near bins, including general waste bins.

Where multiple bins are available, consider using footprints leading to the next bin can subtly guide behavior without enforcement. Leading from problem areas to bins, paws, hoofprints, or bird tracks can create an even stronger visual guide while reinforcing the idea that wildlife roams these spaces and is affected by waste.

Increase the visibility of irresponsible behaviours and their consequences

One powerful way to increase accountability and encourage dog owners to clean up after their pets is by creating the feeling of being watched — even in natural spaces where there may be no human observers. This strategy taps into the “watching eyes effect”, where people are more likely to follow rules if they believe they are being observed, even subconsciously. This concept can be applied in the outdoors as well by emphasising that wildlife is watching. This messaging shifts the focus from human enforcement (e.g., fines or social pressure) to a more subtle yet constant presence — nature itself. When dog owners are reminded that birds, deer, or other wildlife are witnessing their actions, it creates an emotional connection between responsible behaviour and respect for the environment. Posters or trail signs with illustrated or photographic eyes of animals with accompanying phrases like “Wildlife is watching — leave only footprints” can reinforce accountability.

**Make the
responsible
behaviour easier
and more
attractive**

Carrying dog waste is never appealing, however framing it as “team effort” by involving dogs to carry it (e.g., making the dog carry it attached to their harness) can make it less burdensome for owners, while also providing positive reinforcement that they are a good team.

Another recommended strategy for carrying dog waste home where bins are not available could involve attaching it to windshield wipers. This recommendation could be complemented by a window or bumper sticker, evoking positive emotions of pride in owners. Stickers that transmit the message of “Proud to Carry It or #ProudToScoop” can serve as visible displays of responsible dog-ownership.

4.2 Keeping dogs on a lead and under control

The behavioural challenge

Owners letting their dogs roam off-lead poses dangers to wildlife, farm animals and the dogs themselves. Dogs may end up chasing wildlife into roads, separate mothers from their young or cause animals to die from shock. They may also harm farm animals by worrying them, chasing them and injuring them. Dogs can also disturb ground nesting birds, damage flora, local ecosystems and habitats or food for animals and insects (Edwards & Knight, 2006). Dogs off-lead might scare other visitors of the outdoors, including children. Last but not least, when unsupervised, dogs can get harmed themselves, become ill, or even be shot by land owners. “Owners can be held responsible for any losses involved in dog attack, with serious financial and legal consequences”. “Farmers have a right to protect their sheep flock and can shoot a dog worrying, or about to worry their flock.” said IFA chairman (Sinnott, 2017).

The problem of dogs worrying and attacking sheep has become a particular concern, with rising numbers of attacks since the COVID-19 pandemic, when many people became first-time dog owners without having opportunities for proper socialisation, and dog management control and training. “The stress of worrying by dogs can cause sheep to die and pregnant ewes to miscarry their lambs, and sheep fleeing from dogs are often killed or seriously injured by their panicked attempts to escape.” as noted by the National Sheep Association (UK) Osborne-Sherlock (2024). Even if sheep survive the attack “dog bites can necessitate sheep being put down at a later date, or in less severe cases considerable veterinary bills and additional welfare issues.” Research by NFU Mutual found that Northern Ireland saw a doubling of dog attacks on farm animals in 2023 compared to 2022 and 2021, resulting in an estimated £147,000 worth of farm animals being killed or severely injured. Across the UK, the cost of dog attacks on farm animals was estimated at £2.4 million in 2023, an increase of almost 30% from 2022 (Bradfield, 2024).

Statistics collated by the Irish Farmers Association (IFA) indicate that on average, a dog attack leaves 11 sheep killed or injured, and 300-400 dog attacks on sheep occur each year, leaving a total of 3,000-4,000 sheep injured or killed (IFA, 2017). In a recent attack in December 2024 two dogs ran sheep off the side of a cliff in west Galway, leaving the farmer to search for more than half of his flock of 50 ewes (Bardon, 2024). Many went to the sea and drowned, others were killed from wounds and even more have been put down, however the full extent of the damage won't even be known until lambing season. According to the farmer, his high-quality Texel-cross ewes could cost €350/head to replace, setting him back thousands of euros. A similar recent incident happened to a Kerry farmer, leaving four sheep injured, one dead and two missing (Kelleher, 2024). The owner of the dog responsible for the attack fled the scene. Such incidents highlight the economic and emotion

Regulation in Ireland

The Control of Dogs Act 1986 set out a range of requirements for all dog owners or any other person in charge of a dog to follow, in particular the requirements for keeping dogs under effective control. Furthermore, Section 9 (2) clearly states that the owner or any other person in charge of a dog that worries farm animals is guilty of an offence, while Section 21 provides that the owner of a dog shall be liable in damages for an attack on farm animals. A 2023 amendment to the Control of Dogs Act increased the fine for dog owners whose pets are

found worrying sheep from €100 to €300. Additional fines max also apply if dogs are not wearing collars, muzzles or do not have a license.

Department of Rural Development figures for 2023 showed that 420 farm animals were reported as maimed, killed or put down as a result of dog attacks. Some 1,858 fines were issued to dog owners for all dog-related offences brought to authorities' attention in 2023, but fewer than half of these were paid (Bardon, 2024)

Why do people let their dogs roam freely?

Dog ownership practices vary significantly, with some dogs being closely integrated into human households as pets, while others are left to roam freely in the garden or used as working animals (Edwards & Knight, 2006). These varying levels of human control and dependence result in different leashing habits in public spaces. This relationship dictates how dog walkers interact with and relate to their dogs, other people and the environment. For example, the – perceived – preferences and needs of dogs influence where people choose to walk; favourite sites are those where dogs are perceived as most happy - where they are permitted to run off-lead, where they can socialise with other dogs, (Edwards & Knight, 2006). Findings from a research by the NFU Mutual, showed that 68% of dog owners let their pet roam free in the countryside - and 8% admitted their dog chases farm animals (Bradfield, 2024).

Exceptionalism and overconfidence

This special relationship however can also exacerbate certain behavioural biases, leading to irresponsible behaviour. Exceptionalism bias is the most salient, with owners mistakenly believing that their dog is 'exceptional' and should be treated as such. A related bias which is often noticeable is 'optimism bias', where owners are overconfident about either their ability to control their dog (e.g. overestimating their ability to call their off-lead dog back to them) and their dogs good behaviour (e.g. wrongfully believing they would never cause any harm). These two biases often combine and result in owners holding different views about what behaviours other dog owners should perform and what they themselves should. For example, a survey of dog walkers in Australia found that whilst 77% agreed supported rules and regulations (such as limiting when dogs are allowed on beaches and keeping dogs on a lead), only 29% complied with such regulations themselves (Guinness et al., 2020).

Social influences and norms

Dog walking is also a social activity, and the presence of other dog owners significantly influences lead use. Many dog walkers choose locations where they anticipate meeting others, because they believed that their dog enjoyed socialising with other dogs (Edwards & Knight, 2006; Williams et al., 2009). Dog walkers tended to see themselves as members of a group with shared attitudes and norms, and meeting others when out walking provided a sense of safety within this group that was not experienced when walking in more remote areas.

Additionally, research suggests that perceived social norms — whether other owners are seen to put their dogs on a lead — strongly predict individual compliance with regulations (Williams et al., 2009). Where keeping dogs on a lead is uncommon, individuals may feel less compelled to follow laws, particularly if they believe others will not report or disapprove of off-lead behaviour (Williams et al., 2009).

Attitudes toward keeping dogs on a lead are shaped by various demographic and belief factors. Surveys conducted in Victoria, Australia explored self-reported leashing behaviour by dog owners in different habitat types, exploring demographic, attitude, and belief variables as predictors of compliance (Eeden et al., 2022). The survey found support for leashing regulations both among dog owners and those without dogs, but

generally reported low compliance by dog owners. The most significant predictors were found to be social norms, and habits. Additionally, older age and beliefs about wildlife protection predicted compliance in water-based areas (e.g., beaches, wetlands), while beliefs that off-lead roaming is beneficial to dogs predicted compliance in other natural areas (e.g., hiking trails) (Eeden et al., 2022).

Personal obligation and perceived necessity

Another study conducted in Australia identified four key attitudinal dimensions influencing lead use: (1) compliance and support for rules and regulations, (2) perceived dog behaviour and control, (3) rights of dogs and (4) value of dogs compared with wildlife (Guinness et al., 2020). Looking at demographic characteristics, the study found that younger respondents (aged 18–24) were more likely to agree that leashing effectively controls dogs, whereas middle-aged residents expressed less support for leash regulations. Furthermore, men were more likely than women to prioritise dogs over wildlife, leading to lower compliance in protected areas (Guinness et al., 2020).

Compliance with leash laws is also influenced by personal obligation and perceived necessity. Research on beach dog-walking in the United States found that owners were more likely to put their dog on a lead when they believed doing so was expected by others or necessary for public safety and wildlife protection (Comber & Dayer, 2021). However, owners who valued off-lead recreation were less likely to feel obligated to comply. Community-driven approaches that highlight the ecological impact of free-roaming dogs, such as their threat to beach-nesting birds, may improve compliance by reinforcing social responsibility and providing designated off-lead areas, as suggested by the study by Comber & Dayer (2021).

Environmental factors

The physical environment also plays a role in compliance. Locations that are perceived as safe and suitable for off-lead activity encourage owners to let their dogs roam. Additionally, some owners believe that leashing restricts their dog's natural behaviour, reducing opportunities for exercise and socialisation (Guinness et al., 2020). Conversely, areas with clear signage, enforcement of regulations, and community expectations for leashing report higher compliance. For example, in water-based areas such as beaches and wetlands, where wildlife protection is a concern, older dog owners and those with conservation awareness were more likely to follow leash regulations (Comber & Dayer, 2021).

Despite existing laws, awareness of dog ownership responsibilities remains limited. A study of 679 University College Dublin employees found that knowledge of eight dog ownership responsibilities are prescribed by law in Ireland (dog fouling in a public place, the leashing and muzzling of certain breeds, holding a dog license, straying of dogs, safeguarding health and welfare of dogs, dog abandonment, prohibition on tail docking of puppies and the mandatory wearing of identification) was generally low, even among dog owners. While awareness was highest for regulations with direct human consequences — such as fouling laws and breed-specific muzzling requirements — fewer participants were aware of laws concerning dog welfare and abandonment (Keogh et al., 2022). Moreover, for most dog ownership responsibilities, differences in prevalence (PD) of awareness between owners and non-owners and females and males were trivial (PD < 10%).

#LeadOn by NSA (UK, 2021)

The awareness and accountability strategy in the #LeadOn campaign encourages dog owners to stop and think about the devastating impact their pets can have on sheep. The campaign highlights the serious welfare consequences of dogs chasing, barking at, or attacking sheep, through a combination of social media activism, online workshops, and case studies. Dog owners are encouraged to use the hashtag #LeadOn, as well as Facebook story frames and downloadable graphics to promote responsible behaviour, keep their pets on leads near farm animals, and spread awareness among their communities.



#LeadOn campaign, UK (2021)

#KnowTheCode, Scotland

The #KnowTheCode campaign, developed as an actionable intervention on the back of the comprehensive Scottish Outdoor Access Code uses a normative and responsibility-based strategy to encourage dog owners to act responsibly in shared outdoor spaces. By highlighting social responsibility and community expectations, it promotes behaviours that protect wildlife, farm animals, and other people. For example, the campaign warns that disturbing wildlife can cause unnecessary stress and encourages walkers to move on if animals show signs of distress. Similarly, it stresses that dogs can pose a serious risk to farm animals, advising owners to keep their dogs on a lead. While these messages help raise awareness, recommendations like "if in doubt, use a lead" may be too subjective, as different owners interpret doubt differently. More explicit guidance, such as always using a lead in areas with farm animals, would reduce ambiguity and improve compliance.



#KnowTheCode campaign, Scotland (2022)

Other signs that focus on the potential consequences of letting dogs roam freely around farm animals typically use simple and direct language to highlight the risks. They often state that dogs can harm, or even kill farm animals. These signs aim to create a sense of urgency and responsibility, ensuring that dog owners understand the immediate risks of failing to control their pets in rural areas.



Examples from signs in Scotland (BBC, 2019) and Ireland (Farmers Guardian, 2024)

"A dog walker's guide to protecting bird and other wildlife", UK

The Bird Wise Coastal Canine campaign uses education, guidance and a cause-and-effect awareness strategy to inform dog owners about the direct impact their pets can have on wildlife conservation (Birdwise, n.d.). By emphasising that wildlife depends on these habitats for survival, the campaign makes the connection between human actions and environmental consequences in an encouraging way. Through clear guidance, – such as keeping dogs on marked paths and under close control – the campaign frames these actions as a way for both owners and their pets to enjoy nature without harming it, fostering a sense of stewardship rather than restriction.

The campaign also uses a frame as a photo opportunity, which – if for example, positioned at the start of trails – can serve as a commitment device, to take a fun photo and reinforce their symbolic commitment to follow the guidelines and keep their dog under control. If uploaded to social media, it also bridges on-the-ground awareness and online advocacy.



"A dog walker's guide to protecting bird and other wildlife" and "I am #BirdWise" campaigns, UK

"Don't be like Bob!", Chicago, USA

The city of Chicago has recently employed a shaming and anti-social behaviour framing strategy to encourage leash compliance among dog owners (Filbin, 2024). These signs depict fictional but relatable scenarios and publicly call out irresponsible behaviour, using social pressure and guilt as motivators, reinforcing the idea that allowing dogs to roam freely is not just rule-breaking, but anti-social behaviour. While the impact of the initiative hasn't been formally measured, it reflects a proactive attempt to shift social norms, using public visibility and shaming.



“Don’t be like Bob” campaign, Chicago, USA (2024)

“Keep Your Dog on a Lead or You’re on Dangerous Ground” UK

The “Keep Your Dog on a Lead or You’re on Dangerous Ground” (NetworkRail, 2015) campaign uses a fear appeal and risk-awareness strategy to emphasise the life-threatening dangers of off-leash dogs near railway crossings. Led by Network Rail in partnership with Dogs Trust, the campaign highlights the alarming number of near misses and fatalities involving dog walkers on train tracks. Through an additional safety film and educational outreach, the campaign drives home the message that dogs do not understand the risks of train tracks, but owners do — and it is their responsibility to keep pets safe. Research from Dogs Trust supports the need for this initiative, revealing that most dog owners acknowledge their pets do not always return on command, yet many would instinctively run onto tracks to retrieve them, putting their own lives in danger.



“Keep Your Dog on a Lead or You’re on Dangerous Ground” campaign by NetworkRail, UK (2015)

Summary of recommendations

Inform and educate

Instead of simply stating “No dogs allowed” or “Dogs must be leashed,” messaging should explain why these rules exist. Signs and information boards should highlight the dangers of loose dogs, not just to farm animals but also to wildlife. Rather than assuming owners understand the risks, messages should explicitly state that loose dogs can cause stress, injury, or even death to sheep. This, in turn, affects farmers, who may face serious financial and emotional consequences.

The language used in messaging should be direct and unambiguous to avoid any misinterpretation. Instead of vague instructions that leave room for personal judgment, messaging should make it clear that leashing is the only acceptable option. Statements like “When in doubt, use a leash” should be replaced with more definitive instructions, such as “If you are in the outdoors, your dog must be on a leash.”

Appeal to emotions

It is important to remove any perception that certain dogs are exempt from the rule. However, since dog owners often believe their pet is an exception, it is more effective to acknowledge their feelings while reinforcing the need for compliance. Instead of saying, “Your dog is not special,” which could be met with resistance, a more effective approach could be to say, “Yes, your dog is special, but not to sheep. Sheep are scared of all dogs.” This approach prevents defensiveness while still making the rule clear.

Personalise and humanise messages and signs

It is important to build respect for farmers, farm animals, and wildlife. Farmers simply want to do their jobs without the added stress of dealing with dogs disturbing their animals. Featuring personal stories, real-life cases, or testimonials from farmers can build empathy and encourage owners to take the issue seriously.

Instead of generic signs that say “*Private Land*” or “*Keep Dogs on a Leash*”, a more effective approach is to personalise the message by introducing the farmer and their flock. A sign at a trailhead or farmland entry could feature a real local farmer and highlight their personal connection to their animals: *“Hi, I’m Farmer [name]. This is my farm, and these are my 200 sheep — yes, I know them all by name! They are my livelihood, my responsibility, and my pride. When dogs chase or stress them, it can cause serious harm—even if no physical contact happens. Please respect my work and my animals by keeping your dog on a leash. Thank you!”* By replacing abstract rules with a real person and their story, this approach humanises the issue and builds empathy. Seeing a face, a name, and the personal stakes involved makes dog owners more likely to respect the request, as they are no longer just following an impersonal rule but protecting someone’s animals and livelihood. This method can be further enhanced with photos of the farmer and their sheep.

“Flipping the script” (e.g. “I promise to keep my human on a lead!”) between owners and dogs could be a humorous way to showcase owners’ responsibility and encourage compliance in a fun way.

Make nature feel familiar by drawing relatable comparisons

As another approach to building respect for farmers, campaigns could reframe land as workplaces to build respect for farmers, drawing a parallel between a farm and a traditional office. Just as no one would walk into an office, smash equipment, scare colleagues, and disrupt work, a loose dog on a farm causes similar chaos by stressing farm animals and damaging a farmer's livelihood. Using side-by-side visuals (e.g. an office in disarray next to panicked sheep) or asking dog owners how they would feel if someone scared their colleagues can create empathy and shift perspectives.

Consider using other simple-to-understand analogies to leashing dogs as a precautionary measure. For example, people instinctively wear seatbelts in cars, not because they expect an accident every time they drive, but because it's a precautionary measure that protects everyone. Leashing a dog is like wearing a seatbelt — it's a simple, automatic action that prevents serious harm, even if you think nothing bad will happen. Such simple and familiar analogies could normalise responsible behaviour.

Promote planning ahead

An effective way to prime responsible behaviour is by using a commitment device. Setting up a simple photo station at the start of trails allows owners to engage with the message while taking a picture of their dog (which they love doing). This approach does not only make it more likely to follow through, it bridges digital and physical interventions for the same campaign.

Implement and enforce regulations

We recommend enforcement mechanisms to be strengthened to ensure fines act as both a deterrent and an educational opportunity. To prompt timely payments of fines for disturbing farm animals are enforced, they could be redesigned in a behaviourally-informed way. Additionally, fines should be seen as an opportunity for education rather than just punishment. When a fine is issued, owners should also receive additional information on why leashing matters, turning enforcement into a learning moment.

Safety-related responsible behaviours



5.1 Taking precautions to manage risk (including avoiding unmitigated risk)

This report uses a definition of risk identified by Gsaettner et al. (2016, p.6) as ‘the possibility of personal suffering from accidents, injury, or even death of...recreationalists visiting natural settings’. The term safety refers to reducing risk, although it can be applied to both individuals performing a behaviour and others who may be affected by it. Therefore, this report considers safety-related responsible behaviour to be behaviour that reduces the possibility of suffering from accidents or injury from participating in outdoor recreation.

In discussing risk in this context, Haegeli & Pröbstl-Haider (2016, p. 1) distinguish between adventure sports (where the possibility of ‘dangerous or uncertain’ outcomes is integral to the enjoyment of the activity (for example, rock climbing, mountain biking, and skydiving) and other ‘nature-based recreation activities’ where risk is involved but is not essential to the activity. Distinguishing between outdoor recreation activities based on users’ desire for risk is relevant for considering interventions that target users to manage risk effectively.

It is important to note that in outdoor recreation, risk cannot be eliminated entirely, and nor would many users want it to be as it can in many circumstances meaningfully contribute, if not be integral, to their enjoyment of the activity (Dickson et al., 2000; Grant et al., 1996; Gstaettner et al., 2016; Haegeli & Pröbstl-Haider, 2016). That said, the risk level for most activities can be at least partially mitigated by individuals by taking on activities that match their level of skill and experience and bringing appropriate resources with them.

Burden of responsibility

Who is responsible for individual recreationists’ safety (i.e. themselves, or activity providers) has been ‘much debated’ and is highly context-dependent (Grant et al., 1996, p.34). Generally, individuals do and should take responsibility for their own safety. This principle is reflected in the 2023 amendments to the Occupiers’ Liability Act, which limits the liability of landowners to recreational users and includes a voluntary assumption of risk on behalf of recreational users. There are, however, scenarios, such as during organised recreation activities (like whale watching or white water rafting) where recreationists may explicitly or implicitly ‘abdicate their individual responsibility to the provider’ (Ibid., p. 35). The Visitor Safety Group (introduced in more detail in the Evidence base section below) presents a linear relationship between the remoteness of the outdoor activity and the level of management intervention; the more undeveloped the location, the more visitors should accept responsibility for their own safety.

Actual versus perceived risk level

In reality, the perceived level of risk of different actions and activities will vary from one individual to the next. The actual level of risk depends on a number of factors that may not be visible or measurable and is highly influenced by the skill and experience of individuals. This means that the same activity does not pose an equal danger to two different individuals. As an extreme illustration of this, skiing down a black run will be much more dangerous for a beginner skier than an experienced one, even though it is the same activity.

Managing risk and when to avoid actions entirely

This section on safety-related responsible behaviour primarily focuses on encouraging outdoor recreationists to manage potential risk by taking precautionary measures such as bringing certain equipment and taking on activities for which they are appropriately skilled. It does also include references to encouraging users to avoid unambiguously dangerous actions for which no mitigations can reasonably reduce the likelihood of accidents and injury (such as cliff jumping, and swimming or climbing in unsafe areas).

Leave No Trace Ireland have created an outdoor safety checklist which provides a useful overview of important safety-related actions, including:

- Checking the weather forecast
- Bringing resources and equipment such as food, water, a first aid kit, a map and compass, sunscreen, insect repellent, a multitool, and a power bank
- Wearing appropriate clothing for weather conditions and terrain
- Sharing the trip plan with family or friends
- Keeping appropriate distances from animals, and staying on paths and trails.

Responsible behaviour also refers to carrying out actions in the “proper way” in order to reduce the danger posed to oneself and others. For example, this might include actions like shutting gates, parking safely and not blocking roads or entrances, camping on durable ground, exhibiting fire safety when using and disposing of barbecues, and several more.

The behavioural challenge

Biased risk perception and overconfidence

Our perceptions of risk in outdoor settings are significantly influenced by various psychological biases that can lead to irresponsible behaviours. One key factor is optimism bias (also known as exceptionalism bias). This refers to our tendency to believe we're less likely to experience negative outcomes than others. When applied to outdoor recreation, this manifests as recreationists believing "it won't happen to me". As Mäiren et al. (2021) demonstrated in their research on driving behaviour, individuals with higher levels of optimism bias and illusion of control (an overconfident belief that we have control over outcomes when we do not) are more prone to engaging in risky activities.

This optimism bias operates differently depending on experience level. First-time visitors or novices often underestimate environmental dangers, misjudging risks like swimming in unfamiliar waters or approaching wildlife. They may lack the knowledge to recognise hazardous situations or assume activities are safe simply because others are doing them. Paradoxically, experienced outdoor enthusiasts can develop a different form of risk blindness through overconfidence, believing their skills and past successes guarantee future safety. This desensitisation to danger can create a false sense of security, increasing the likelihood of risky behaviour. These contrasting perceptions of risk not only shape individual actions but also make it challenging to establish consistent safety and environmental responsibility standards in outdoor settings.

Additionally, we can erroneously perceive risk due to a cognitive bias known as ‘dread risk’, where we overestimate the likelihood of a rare but catastrophic event, even when they are less probable than other risks. This can be due to a number of reasons, including the severity of consequences if the event does occur.

Social norms and peer pressure; the desire to copy and impress others

Social factors also significantly impact risky behaviour in outdoor environments. Many individuals engage in such activities to gain social validation or affirm their identity within a community of outdoor enthusiasts. Research indicates that peer pressure and social norms can encourage people to take risks they might otherwise avoid, especially when these activities are viewed as culturally valued or as demonstrations of bravery and competence (Woodman et al., 2013). The rise of social media has amplified these influences, motivating individuals to seek recognition by sharing their daring outdoor exploits online, thereby normalising and incentivising risky behaviour. Studies, such as those by Giovanardi et al. (2021), show how the pursuit of dramatic images for platforms like Instagram has driven an increase in risk-taking in natural settings.

Additionally, peer dynamics can push individuals to attempt activities beyond their capabilities, a phenomenon Davidson (2012) refers to as "social proof," where people rely on others' actions to determine appropriate behaviour in uncertain situations. Given that a person's actual exposure to risk is so affected by their level of skill, experience, and preparation, it can be easy for individuals to misjudge how much risk other recreationalists are taking on (by not taking these factors into account). As such, they may attempt to copy that activity but by doing so unwittingly expose themselves to a higher level of risk than they are comfortable with. Alternatively, they may believe that others are "braver" than they are and feel pressure to join them, when actually the others are just more skilled. Communications that highlight this and that remind users of the relationship between skill and experience and risk can help to address these issues.

Warning signs

In the field, the role of warning signs also play an important role in influencing risky behaviour. According to Laughery and Wogalter (2014), warning and environmental signs serve three main purposes; 1) provide information about hazards, potential consequences and safe behaviours, 2) influence behaviour and encourage users to act safely by presenting clear risks and instructions, and 3) remind users, by bringing latent knowledge about the risks to the forefront when needed. Such signs must therefore first attract attention, then enhance knowledge about the hazard, and ultimately encourage compliance with safety instructions. Issues of recreationalists ignoring signs are unfortunately common. For example, a 2024 inspection report found that warning signs at the Cliffs of Moher were routinely ignored or unheeded. The walking trail has now been closed whilst safety improvements are implemented.

In a review of 25 years of signage research, Laughery and Wogalter (2014) identify design and non-design factors as the two main categories impacting compliance with signs. Design factors such as the location, size, colour, and use of explicit, concise language and pictorial symbols (either illustrating the hazard, the consequence or the instructions) significantly impact their effectiveness. For instance, bright colours like red or yellow and clear hazard symbols often catch attention more effectively, while explicit messages specify risks. However, they also note that compliance with signs often hinges on non-design factors, such as the perceived cost of adhering to safety guidelines or the individual's familiarity with the environment – similar principles to those described above. They emphasise that people are less likely to comply if following the instructions feels inconvenient or time-consuming, which can be particularly true in outdoor settings where personal freedom and spontaneity are highly valued.

Thrill and sensation seeking

The nature of outdoor recreation means a degree of risk is inherent, but for certain activities it is crucial. Zuckerman's sensation-seeking theory suggests that some individuals have a strong craving for novel, intense, and exhilarating experiences, which can overshadow their awareness of potential risks (Zuckerman, 1994). Activities such as cliff jumping or hiking in hazardous weather provide the adrenaline rush and sense of achievement that these sensation-seekers actively seek. For such individuals, emotional rewards like excitement or the satisfaction of overcoming a challenge often outweigh concerns about personal safety (Brymer & Schweitzer, 2013). This mindset fosters a desire to push boundaries and engage in actions that might otherwise be deemed reckless or excessively dangerous. Thrill-seekers often prioritise the excitement of venturing off-trail or engaging in high-risk activities over considerations of safety or environmental consequences. Additionally, the perception of nature as "wild" and "untamed" is frequently used to justify such risky behaviour, creating a tension between the pursuit of personal freedom and the responsibility to follow safety and ecological guidelines.

Visitor Safety Group - Guiding Principles

The Visitor Safety Group (VSG) has over 80 members, consisting of organisations that own and manage land as well as national policymakers. This includes several members of Comhairle na Tuaithe. The group's 'fundamental aim is to identify and promote ways to manage visitor safety that sustain the environment and enhance the value to society of our landscapes and special places' (Visitor Safety Group, 2019). VSG has developed guiding principles relating to fundamentals, awareness, partnership, responsibility and risk control. These serve as practical guidance on best practices for managing safety in the countryside; it is recommended that interventions developed to create safety-related behaviour follow these guiding principles.

The following list represents some of the key VSG principles to consider when managing visitor safety:

- Do not take away from people's sense of freedom and adventure
- Avoid restrictions on access
- Ensure that visitors know the risks they face
- Inform and educate visitors about the nature and extent of hazards, the risk control measures in place, and the precautions that they should take
- Recognise that people taking part in similar activities accept different levels of risk
- It is important to strike a balance between visitor self-reliance and management intervention
- Assess risks and develop safety plans for individual sites
- Monitor the behaviour and experiences of visitors to review visitor safety plans

Fundamentals	Awareness	Partnership	Responsibility	Risk Control
• Take account of conservation, heritage, recreation, cultural and landscape objectives. • Do not take away people's sense of freedom and adventure. • Avoid restrictions on access.	• Ensure that your visitors know the risks they face. • Inform and educate your visitors about the nature and extent of hazards, the risk control measures in place, and the precautions that they should take.	• Recognise that people taking part in similar activities accept different levels of risk. • Recognise that risk control measures for one visitor group may create risks to others. • Work with visitor groups to promote understanding and resolve conflict.	• It is important to strike a balance between visitor self-reliance and management intervention. • It is reasonable to expect parents guardians and leaders to supervise people in their care. • It is reasonable to expect visitors to exercise responsibility for themselves. • It is reasonable to expect visitors not to put others at risk	• Assess risks and develop safety plans for individual sites. • Risk control measures should be consistent. • Risk control measures should take account of wider benefits to society. • Monitor the behaviour and experiences of visitors to review visitor safety plans. • Make sure that your work activities do not expose visitors to risk.

Visitor Safety Group Guiding Principles

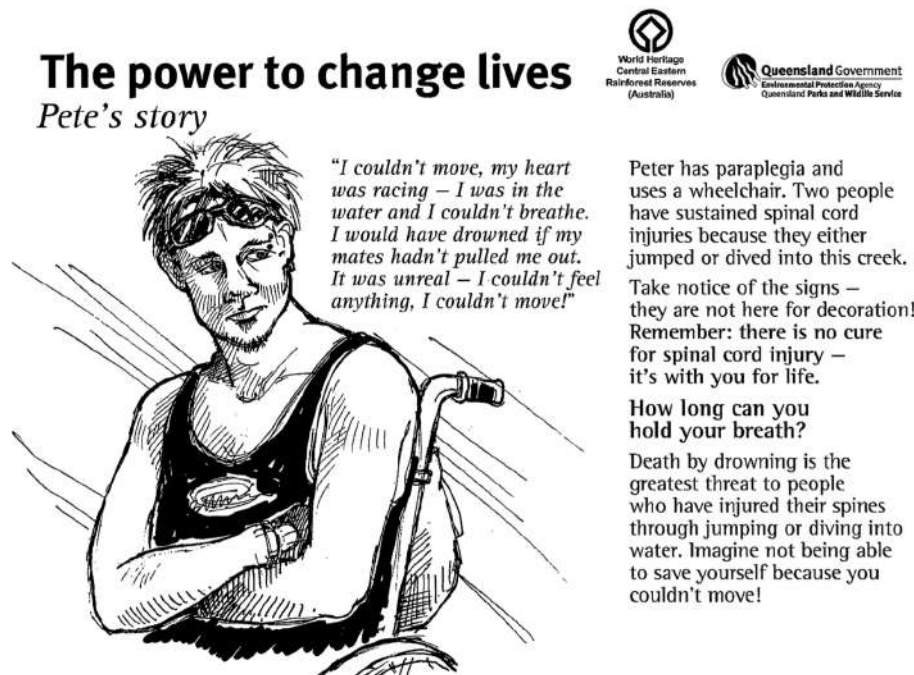
Pete's Story: Interpreting the Consequences of Risk-Taking Behavior (Parkin & Morris, 2005)

The researchers found that existing signage at a popular swimming site (The Cougals' rockpools) within Springbrook National Park in Australia was having little effect on visitors' risk taking. Seeking to address this, they designed a new interpretative safety sign which uses the example of a person ('Pete') to 'provide a first-hand account of a [previous] swimming-related accident' at the site (p. 140).

The sign conveys information about the risk to visitors' from unsafe swimming and urges them to consider the potential consequences of this behaviour - 'Remember there is no cure for spinal cord injury - it's with you for

life'. The framing of this message also targets readers' present bias by reminding them of the long-term potential consequences of the action they may wish to engage in right now. Above all, the sign is deliberately designed to make its readers feel uncomfortable which the researchers believed would act as a mechanism for changing their behaviour. The person depicted was deliberately chosen to be a young man as previous research found that young men were the most frequent swimmers at this location and the most likely to have an accident, due to their 'risk-taking propensity, lack of judgement/maturity, and/or susceptibility to peer pressure' (p. 143).

The effectiveness of the sign was assessed via a survey of 169 visitors to the rockpools. 79% of respondents noticed this new sign, and 97% noticed any warning signs at the site. 86% of respondents said the sign was 'sufficient to advise people...about the dangers' (p. 146). Of respondents who were at the site specifically to swim, 38% said the sign directly influenced their decision not to; this was particularly significant as in previous research, 91% of swimmers said they would not change their behaviour even if they knew people had been seriously injured swimming there before. Two-thirds of those who saw the sign and continued to swim said the sign made them more cautious.



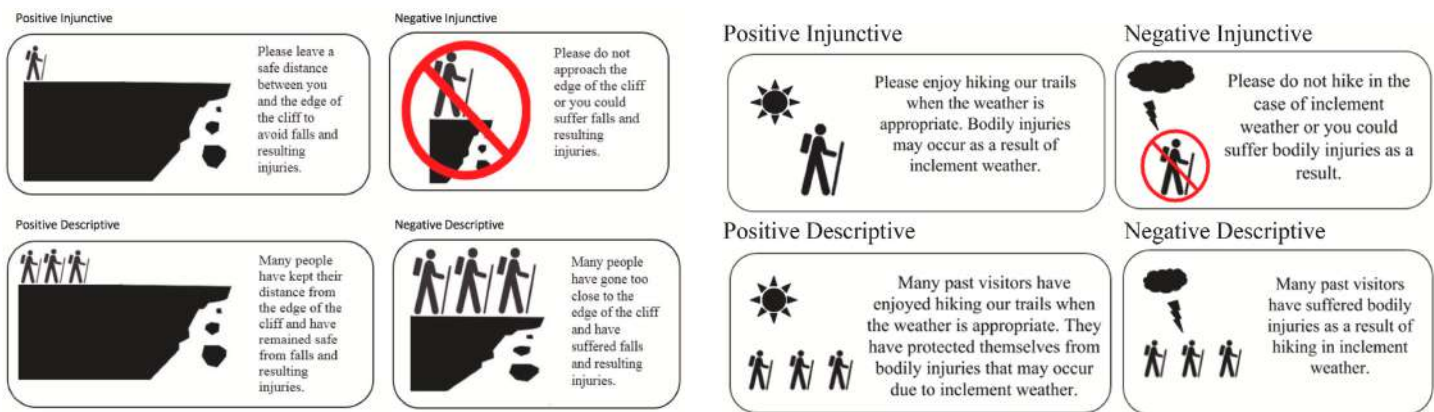
Pete's Story (Parkin & Morris, 2005)

DANGER! NO HIKING! Risky hiking decisions, framing of normative warning messages, and self-exempting beliefs (Kortenkamp et al., 2021)

Kortenkamp et al. (2021) investigated how warning sign design and self-exempting beliefs influence hikers' decisions to engage in risky behaviour. The study surveyed 198 college students with hiking experience, presenting them with hypothetical scenarios involving risks such as approaching a cliff edge, encountering bison, or hiking in dangerous weather conditions. Participants evaluated warning signs that varied in norm type (injunctive vs. descriptive) and framing (positive vs. negative). Results indicated that messages highlighting past injuries were most effective in deterring risky behaviour. However, self-exempting beliefs, such as

perceiving the risk as exaggerated or believing one could avoid injury through caution, were stronger predictors of risky intentions than sign content alone.

In the weather-related scenario, participants exhibited lower bulletproof beliefs compared to other risks, suggesting they were less likely to assume they could personally prevent harm in a lightning storm. This may be because weather is perceived as less controllable than other hiking hazards. Negative framing was particularly effective in this context, with warnings such as "Many hikers have been injured in lightning storms" increasing risk perception and reducing the willingness to hike. Additionally, the perceived likelihood of injury was higher for the weather scenario than for other risks, indicating that participants recognised the inherent danger of hiking in a storm more readily than other threats. Unlike other scenarios, however, social norms had a weaker influence on decision-making; descriptive messages such as "Most hikers stay off trails during storms" were less effective, possibly because participants viewed the decision as a personal safety issue rather than one shaped by group behaviour.



Examples of positive and negative injunctive and descriptive norms (Kortenkamp et al., 2021)

Best practice principles for communicating safety messages in national parks (Saunders et al., 2019)

Saunders et al. (2019) examined best practice principles for communicating safety messages in national parks, particularly through signage. Given the increasing number of visitors to protected areas and the potential for serious incidents, the study aimed to develop and test a set of "best practice principles" to improve the effectiveness of safety communication. The first principle focused on the design and placement of safety signs, the second on the broader communication strategies, and the third on integrating safety messaging into overall risk management systems. These principles were field-tested in national parks across Queensland and Victoria, Australia. Results highlighted the importance of well-placed, visually clear, and contextually relevant signs that go beyond regulatory compliance to actively influence visitor behaviour. Additionally, the study found that signs alone were insufficient; effective safety messaging requires coordination with pre-visit information, engagement with stakeholders such as tourism operators, and alignment with broader risk management frameworks.



Best performing warning sign (Saunders et al., 2019)

Evaluating a novel sign's impact on whether park visitors enter a dangerous river (Girasek, 2019)

Girasek (2019) evaluated the impact of a novel sign designed to reduce risky water entry behaviour in two U.S. national parks along the Potomac River Gorge. The study aimed to address the persistent issue of fatal drownings in this area by testing a new signage approach that highlighted legal and financial consequences rather than just safety warnings. The experimental sign, which informed visitors that entering the water was illegal and could result in a fine exceeding \$200, was displayed on alternating weekend days, while a standard safety sign remained visible at all times. Cameras recorded visitor behaviour, capturing 1,441 images over the study period. The results showed that the presence of the experimental sign significantly reduced water entry, lowering the odds by 63%. Additionally, they showed that environmental factors such as air temperature and the number of visitors on the beach also influenced risk-taking behaviour.



Original warning sign (left) and newly developed warning sign (right), (Girasek, 2019)

Sun Safety in Outdoor Recreation Settings (Beck et al., 2015)

Go Sun Smart (GSS) Resorts is a sun safety program which forms part of a \$3 million research project funded by the National Cancer Institute. As part of the research, GSS Resorts have created a range of interventions that have been enacted at 41 destinations across the US and Canada. The destinations include five state parks, and 'resorts' where guests stay in order to participate in outdoor recreation activities. This case study is notable because of the breadth of interventions developed to target the same behaviour. Intervention materials included (10 different) posters, tip cards, videos, digital materials and messages, and employee training.

The interventions are applied in a very specific context (where outdoor recreationists are overnight guests at a resort), however there are five specific learnings that will apply in the Irish context. First, the utilisation of multiple complementary intervention channels rather than relying on just one of these. Second, the tailoring of posters to recommend specific sun-safety behaviours that are relevant for the outdoor recreation activity taking place. For example, this enabled posters to recommend different sun safety precautions for swimmers than for bird watchers, making the information more relevant to the context it's being consumed in. The third and fourth lessons both relate to helping users to prepare effectively ahead of their recreation activity. The 'tip card' contained a checklist of appropriate gear to bring which both presented this useful information in a clear format and encouraged readers to actively prepare by checking they pack the items on the list. Lastly, the resorts would email guests a 'pre-arrival message containing a packing list', which again encourages users to prepare for their recreation. Similar checklists could be hosted on relevant websites and/or received by recreational users ahead of their activity via email or social media. Lastly, this example highlights the important role for commercial (tourism) outdoor activity operators to champion responsible behaviour in a variety of natural environment settings.



Example poster (left) and tip card for resort guests (right) (Beck et al., 2015)

Summary of recommendations

Inform and educate

Educating visitors about the real-time weather and terrain conditions (on-site or digitally, for example using push notification within the Get Ireland Active mobile app), or even recent accidents can provide valuable information before they enter potentially dangerous areas. Additionally, strategically placed, high-visibility signage at key decision points – such as trailheads, cliff edges, and water entry locations – can reinforce these warnings. Using high-contrast colours, clear hazard symbols, and concise messaging enhances visibility and comprehension, making it more likely that visitors will heed safety warnings (Saunders et al., 2019).

Developing interactive safety resources within for example the Get Ireland Active mobile app can further enhance risk awareness. Features such as quizzes on weather conditions, terrain challenges, and emergency preparedness can help users assess their knowledge and preparedness levels before the trip. Such gamified tools should not only keep visitors informed, but help them get actively engaged in assessing their own risks.

Inform users of their responsibility for their own safety, in accordance with Visitor Safety Group Principles and the Voluntary Assumption of Risk established in the 2023 amendments to the Occupiers' Liability Act.

Persuade

Highlight the severity of consequences of unsafe behaviour, such as through real-life injury statistics, to discourage risky behaviour (Kortenkamp et al., 2021). By focusing on tangible consequences rather than abstract dangers, such messages appeal to visitors' emotions and risk perceptions. Additionally, pairing these messages with visual elements can further reinforce their impact.

Social norm messaging can reshape cultural perceptions of adventure and risk, encouraging visitors to associate responsible decision-making with competence. Phrases such as "True adventurers know when to stop" or "Experienced hikers respect the trail" can subtly influence visitors' behaviour by framing safety as a mark of expertise rather than fear. By leveraging group psychology, these messages reduce the pressure to engage in high-risk activities that are often perceived as thrilling or prestigious. Over time, normalising responsible outdoor behaviour through peer-driven messaging can help shift the broader social narrative away from risk-taking.

Increase the visibility of irresponsible behaviours and their consequences

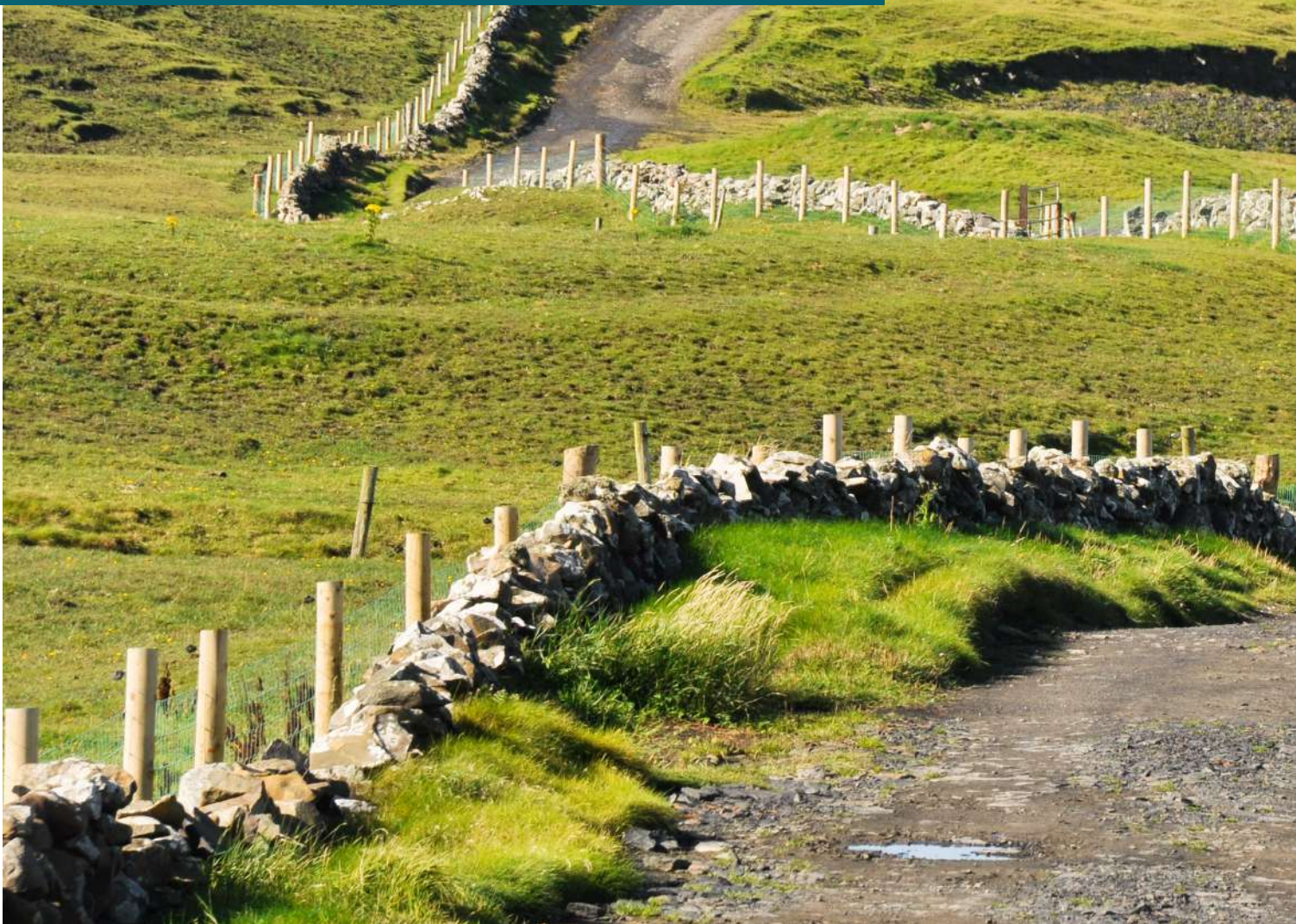
Making the potential consequences of risky behaviour salient can be effective at gathering the attention of outdoor recreationists and ultimately changing their behaviour (Chowdry & Kelly, 2013). For example, the image of Pete who was made paraplegic due to a swimming accident was largely effective at catching visitors' attention, and either changing their behaviour altogether (to not swim) or reminding them to proceed with caution. Encouraging users to think about the long-term nature of potential consequences can target their innate present bias where they over-value how they feel in the immediate moment.

Personalise and humanise messages and signs	Using personification can be effective to grab users' attention. For example, a sign with an image of a human is more noticeable to users' than a typical text-only sign, not least due to its novelty. Including other people as either subjects of a message or to deliver the message itself can work to envision themselves as potential victims of dangerous behaviour and make the potential consequences feel more real. The inclusion of Pete was chosen deliberately to appear relevant to the group identified as most common risk-takers in that scenario: young adult men; the more similar the human in the message to the user reading it, the more likely they are to adapt their behaviour.
Appeal to positive emotions	Behaviour change requires users to re-consider their automatic or initial behavioural intention. Therefore, interventions must be sufficiently powerful to catch users' attention and make them reflect. Inducing emotion, including through shock value (such as the image of a paraplegic), is a key way to do this. For safety-related behaviours, fear will be an important emotion to target.
Promote planning ahead	Being properly prepared for outdoor recreation (in terms of both the gear a user brings with and their own abilities) is essential to reduce their exposure to risk. Communications that target users before they begin their outdoor recreation are important to help users to plan ahead (Chowdry & Kelly, 2013). Such communications may be designed to inform users of the skills required for different activities or routes, so they can choose an appropriate activity for their ability and experience. Alternatively or additionally, they may focus on the resources that users should bring with them; providing checklists can be an effective method for doing this.
Model the desired behaviour	Users should be encouraged to improve their skills for a multitude of reasons, including to reduce their own risk of injury or accident. Organisations such as Leave No Trace Ireland provide various training for recreational users and outdoor educators and operators (including their Certified Awareness, Trainer, and Advanced Trainer courses). In addition, organisations focused on specific activities may offer training to improve users for that specific activity (e.g. mountain biking, kayaking, etc.).
Change the choice architecture	Empowering experienced users of the outdoors to demonstrate responsible outdoor practices can have a significant impact on the behaviour of less experienced visitors. Equipping these users with communication strategies and safety tools to help them initiate conversations with new visitors at trailheads or high-risk areas can proactively reinforce safety norms and provide real-time guidance to those who may be unaware of potential dangers.
Change the choice architecture	Designing physical and visual barriers can subtly guide visitors away from high-risk areas without limiting their sense of freedom or exploration. For instance, strategically placed rocks, logs, or natural vegetation can discourage off-trail hiking while maintaining the aesthetic integrity of the landscape. By making the safer route the easiest and most intuitive choice, visitors are less likely to engage in risky behaviours out of convenience or curiosity. To address the social media-driven risk-taking trend, introducing strategically positioned photo zones that provide stunning views while ensuring visitor safety could be a promising approach.

**Implement
and enforce
regulations**

Girasek's (2019) research demonstrates that legal and financial deterrents are effective in reducing risky behaviour, particularly in outdoor recreation settings. Implementing fines for violations such as illegal water entry, off-trail hiking in restricted areas, or reckless cliff-jumping can create a strong disincentive for dangerous activities. Posting visible warnings at high-risk locations can remind visitors of the consequences before they engage in risky actions.

Summary of recommendations



This report is based on an extensive review of academic and grey literature on facilitating responsible behaviours in the outdoors, as well as previous communication campaigns implemented by authorities across various countries. Many of the insights generated are universally applicable to encouraging behaviour change in the context of the outdoors, but it should be acknowledged that limited academic research has been conducted specifically focusing on the unique Irish context of private land ownership and in many cases outdoor recreation taking place through permissive access granted by landowners goodwill.

Building on this evidence base, the report presents eleven targeted recommendations to support more responsible behaviour among outdoor recreational users. These are informed by behavioural science research on the drivers of human behaviour, as well as lessons learned from previous campaigns. The recommendations can broadly be categorised into three overarching methods. These are to **encourage, enable, and enforce responsible behaviour**.

ENCOURAGE	ENABLE	ENFORCE
Shape attitudes and awareness through information, motivation, and strategic communication.	Create physical and social environments that make responsible choices easy, intuitive, and rewarding.	Implement rules and frameworks that ensure adherence to responsible practices.
→ Inform and educate → Persuade → Increase the visibility of irresponsible behaviours and their consequences → Personalise and humanise messages and signs → Make nature feel familiar by drawing relatable comparisons → Appeal to positive emotions	→ Promote planning ahead → Make responsible behaviour easier and more attractive → Model the desired behaviour → Change the choice architecture	→ Implement and enforce regulation and use policy levers

Encourage strategies will likely be most effective for individuals who are either **uninformed** about what responsible outdoor behaviour entails or **unempathetic** to its impacts.

For the uninformed, persuasive, clear messaging that explains not just *what* to do, but *why* it matters, helps translate vague intentions into specific actions. For the unempathetic, emotionally resonant storytelling and personalised messages can build empathy and shift attitudes. Highlighting the real impacts of irresponsible behaviour on farmers, local communities, wildlife, and the land itself through human voices and relatable comparisons taps into emotional and social drivers, making responsible behaviour feel more urgent, personal, and meaningful. These strategies are most effective when they go beyond broad awareness, using social norms, emotional engagement, and contextual framing to influence both beliefs and behaviour.

Enable strategies will likely be particularly effective for those who are **uninformed not in principle, but in practice**: individuals who may want to behave responsibly but lack the specific skills, tools, or knowledge to do so effectively. These users often face real or perceived barriers that make responsible choices feel inconvenient, confusing, or impractical. Enable strategies work by **removing these practical barriers** and making responsible behaviour the easiest and most intuitive choice. This includes providing clear, practical information such as maps showing disposal points or easy options for carrying waste. It also involves **designing environments that support responsible choices**, such as placing bins at logical points, marking trails clearly, or improving access infrastructure. By guiding movement, reducing friction, and supporting landowners in managing access, enable strategies help turn good intentions into follow-through on the ground.

Enforce strategies are likely most relevant for a small but impactful group: the individuals who are aware of responsible behaviours but choose to ignore them. These users are unlikely to be influenced by education or emotional appeals alone, and their actions can undermine access for others, damage the environment, and erode trust between landowners and the wider public.

For this group, enforcement strategies must focus on **certainty and visibility of consequences**, both formal (e.g. fines, restrictions) and social (e.g. disapproval, being seen or called out). By reinforcing that irresponsible behaviour is noticed and unacceptable, enforcement strategies help deter deliberate non-compliance, uphold shared standards, and protect access for everyone.

Broadly speaking, the purpose of these recommendations can be determined by their category.

Recommendations that **encourage** responsible behaviour are most relevant for designing communications campaigns. Recommendations that **enable** can be useful for informing communications (such as advising people to plan ahead), but may also inform on-the-ground interventions that alter the physical environment to ‘nudge’ people towards the desired behaviour (for example, by providing bins that make correct waste and dog foul disposal easier and more attractive). The singular recommendation to **enforce** regulations is relevant both on-site and on a broader level of informing policy creation and development.

	Disposing of waste correctly	Treating wildlife, nature, farmland, and farm animals with respect	Keeping to paths and trails where possible	Disposing of dog waste correctly	Keeping dogs on a lead	Taking precautions to manage risk
Inform and educate						
Persuade						
Increase the visibility of irresponsible behaviours and their consequences						
Personalise and humanise messages and signs						
Make nature feel familiar drawing relatable comparisons						
Appeal to positive emotions						
Promote planning ahead						
Make the responsible behaviour easier and more attractive						
Model the desired behaviour						
Change the choice architecture						
Implement and enforce regulation						

Areas of future research

While this report draws on a wide range of behavioural science literature and real-world campaigns, it also highlights significant gaps in the current evidence base, particularly in relation to Ireland's unique outdoor access context. Most of the available research stems from other countries with different land ownership models and cultural relationships to outdoor recreation. As such, while many of the insights have been adapted as much as possible, their real-world effectiveness in Ireland remains largely untested. There is a clear need for rigorous, locally grounded research to better understand what works in encouraging and sustaining responsible outdoor behaviour here.

Additionally, many existing studies measure shifts in attitudes, knowledge, or behavioural intentions, which while important precursors to behaviour change, stop short of evaluating actual behavioural outcomes. Future research should address this gap through the use of **field trials, experiments, and observational studies that can measure real-world behaviour over time**. For example, interventions such as educational signage, dog control prompts, or commitment devices should be piloted and evaluated to understand their true effectiveness and how users respond to them in various settings.

There is also a strong case for more targeted research on **when and how to intervene**. Understanding the user journey from planning and preparation through to on-site behaviour and post-visit reflection can help identify key decision points and moments of influence. Timely, tailored messaging, especially delivered via digital tools like apps, could significantly improve the relevance and impact of communications. Testing different message frames (e.g. emotional appeals, social norm cues, environmental consequences) at these key moments would help refine strategies further.

Additionally, future research could explore **longer-term strategies** for behaviour change, such as integrating responsible outdoor practices into school curricula, dog ownership education, or community-based initiatives.

Specific areas of research that could be especially valuable in the Irish context include:

→ Field trials and online experiments

To assess real-world impact, future research should pilot and evaluate interventions recommended in this report through field trials and controlled experiments. These studies should measure actual behavioural outcomes (e.g. trail adherence, litter reduction), not just attitudes or intentions. Online experiments can also test different messaging strategies and formats in a cost-effective yet reliable way, helping refine communications before deployment.

→ Timely and tailored messaging

The report highlights the importance of delivering messages at the right time: during planning, arrival, or key decision points. Future research should explore the effectiveness of real-time digital prompts through platforms like GetIrelandActive. Testing variations in framing, social norms and emotional appeal will help determine which messages most effectively drive behaviour and at what stage.

→ Behaviourally informed educational tools

While this report provides a broad framework for encouraging responsible behaviour, it primarily focuses on immediate interventions targeting outdoor users on-site or through digital media. It does not explore long-term strategies that could shape responsible behaviours from an early age, such as school-based educational initiatives, nor does it consider key moments when interventions might be particularly effective, such as when individuals acquire a pet or relocate to a new area. Educational

tools, which can range from comprehensive school programmes to simple gamified online games could be developed and piloted. Measuring engagement, knowledge retention, and self-reported behaviour change will be key to understanding their impact.

→ **Mapping the outdoor recreation user journey**

Understanding when and how people make decisions during outdoor activities is essential to designing timely and relevant interventions. Further research could map the full user journey, from planning and preparation to on-site behaviour and post-visit reflection, to identify touchpoints for communication or nudging. These insights will help test interventions such as pre-visit prompts, on-site signage, or post-visit reflections. Exploring how motivations to engage in responsible behaviour might shift across this journey will refine the report's recommendations for delivering information in context.

→ **Behavioural redesign of enforcement tools**

To support the report's recommendation of reframing enforcement as a constructive intervention, future studies should evaluate redesigned fixed penalty notices or other compliance tools through a behavioural lens. Testing variations in tone, clarity, visual presentation, and the inclusion of educational follow-ups will reveal whether enforcement can not only deter bad behaviour but also build understanding and long-term compliance. Importantly, it may also improve the currently low collection rate of fines, particularly in relation to dog control.

Overall, advancing the research in the responsible outdoor behaviour agenda would help move beyond intention-focused strategies and toward evidence-based, outcome-driven solutions. As the need for sustainable, respectful outdoor recreation grows, investing in Irish-specific behaviour change research will be essential for informing effective policy, building public trust, and maintaining the balance between access, enjoyment, and stewardship.

Bibliography

- Abrams, K. M., Leong, K., Melena, S., & Teel, T. (2019). Encouraging Safe Wildlife Viewing in National Parks: Effects of a Communication Campaign on Visitors' Behavior. *Environmental Communication*, 14(2), 255–270. <https://doi.org/10.1080/17524032.2019.1649291>
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Atenstaedt, R. L., & Jones, S. (2011). Interventions to prevent dog fouling: a systematic review of the evidence. *Public Health*, 125(2), 90–92. <https://doi.org/10.1016/j.puhe.2010.09.006>
- Bardon, N. (2024). In pictures: deadly dog attack drives ewes off cliff. Retrieved February 13, 2025, from Farmersjournal.ie website: <https://www.farmersjournal.ie/sheep/news/in-pictures-deadly-dog-attack-drives-ewes-off-cliff-848039>
- BBC. (2019). Dog owners warned “no excuse” for sheep worrying. Retrieved from <https://www.bbc.com/news/uk-scotland-46799918>
- Beck, L., Walkosz, B., Andersen, P., Abbott, A., Buller, D., Scott, M., & Eye, R. (2015). Communication Strategies to Promote Health Sun Safety in Outdoor Recreation Settings. *Journal of Interpretation Research*, 20(2), 41–50. <https://doi.org/10.1177/109258721502000205>
- Beeton, S., Weiler, B. V., & Ham, S. H. (2005a). Contextual Analysis for Applying Persuasive Communication Theory to Managing Visitor Behaviour: A Scoping Study at Port Campbell National Park.
- Beeton, S., Weiler, B., & Ham, S. (2005b). CONTEXTUAL ANALYSIS FOR APPLYING PERSUASIVE COMMUNICATION THEORY TO MANAGING VISITOR BEHAVIOUR A SCOPING STUDY AT PORT CAMPBELL NATIONAL PARK. Retrieved from <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=4fa80507d4209b3a4612d1b0a19770af348b3fdf>
- Bern Co. (2024, April 2). There is no Poop Fairy - Public Works. Retrieved February 13, 2025, from Public Works website: <https://www.bernco.gov/public-works/public-works-services/water-wastewater-stormwater/stormwater/stormwater-pollution/poop-fairy/>
- Birdwise. (n.d.). Half Term Guided Walk – Cliffe Pools. Retrieved February 13, 2025, from Birdwise.org.uk website: <https://northkent.birdwise.org.uk/a-dogs-life/>
- Bradfield, P. (2024). Northern Ireland farming: UFU and NFU says dog attacks on sheep and livestock have doubled, with 68% of owners admitting they let their dogs roam free in countryside. Retrieved February 13, 2025, from Belfast News Letter website: <https://www.newsletter.co.uk/country-and-farming/northern-ireland-farming-ufu-and-nfu-says-dog-attacks-on-sheep-and-livestock-have-doubled-with-68-of-owners-admitting-they-let-their-dogs-roam-free-in-countryside-4533439>
- Bradford, L., & McIntyre, N. (2007). Off The Beaten Track: Messages As A Means Of Reducing Social Trail Use At St. Lawrence Islands National Park. *ResearchGate*, 25(1), 1–21. Retrieved from <https://www.researchgate.net/publication/>

279514820_Off_The_Beaten_Track_Messages_As_A_Means_Of_Reducing_Social_Trail_Use_At_St_Lawrence_Islands_National_Park

Brown, K. M. (2014). Spaces of play, spaces of responsibility: Creating dichotomous geographies of outdoor citizenship. *Geoforum*, 55, 22–32. <https://doi.org/10.1016/j.geoforum.2014.05.002>

Brutell, N. (2015). Orange dog poop on area trails draws attention to public health concern. Retrieved from Corvallis Gazette-Times website: https://gazettetimes.com/news/local/orange-dog-poop-on-area-trails-draws-attention-to-public-health-concern/article_bd08758f-b12a-5fce-b573-a02e459c2064.html

Brymer, E., & Schweitzer, R. (2013). The search for freedom in extreme sports: A phenomenological exploration. *Psychology of Sport and Exercise*, 14(6), 865–873. <https://doi.org/10.1016/j.psychsport.2013.07.004>

Campbell, F. (2007). People who Litter . Retrieved from https://www.littering-toolbox.ch/fileadmin/Media/Downloads/D17_People_Who_Litter.pdf

Chamarro, A., Rovira, T., Edo, S., & Fernandez-Castro, J. (2018). Risk Judgments in Climbers: The Role of Difficulty, Meteorological Conditions, Confidence and Appropriate Tools. *Leisure Sciences*, 41(3), 221–235. <https://doi.org/10.1080/01490400.2018.1442266>

Cialdini, R. B., Deamine, L. J., Sagarin, B., & Barrett, D. W. (2006). Activating and Aligning Social Norms for Persuasive Impact. *Social Influence*, 1(1), 3–15. <https://doi.org/10.1080/15534510500181459>

Cingolani, A. M., Barberá, I., Renison, D., & Barri, F. R. (2016). Can persuasive and demonstrative messages to visitors reduce littering in river beaches? *Waste Management*, 58, 34–40. <https://doi.org/10.1016/j.wasman.2016.08.028>

City of Kirkland Public Works. (2020). Pet Waste Bacteria Monitoring, Outreach and Education CITY OF KIRKLAND Acknowledgements. Retrieved from <https://www.kirklandwa.gov/files/sharedassets/public/v/1/public-works/2020-kcd-pet-waste-final-report.pdf>

Cole, D. N., & Monz, C. A. (2002). Trampling Disturbance of High-Elevation Vegetation, Wind River Mountains, Wyoming, U.S.A. *Arctic, Antarctic, and Alpine Research*, 34(4), 365. <https://doi.org/10.2307/1552194>

Comber, C. A., & Dayer, A. A. (2021). Understanding attitudes and norms of dog walkers to reduce disturbances to shorebirds. *Human Dimensions of Wildlife*, 1–15. <https://doi.org/10.1080/10871209.2021.1915437>

Daly, A. (2024, August 21). Counties with worst records on fines for dog fouling and footpath parking revealed as visually impaired people. Retrieved February 13, 2025, from Irish Independent website: https://www.independent.ie/irish-news/counties-with-worst-records-on-fines-for-dog-fouling-and-footpath-parking-revealed-as-visually-impaired-people-call-for-action/a887895062.html?utm_source=chatgpt.com

De Bernardi, C., Linde, S., & Ioannides, D. (2023). Pro-environmental behaviour in sport and outdoor activities: a literature review. Retrieved from <https://www.mistrasportandoutdoors.se/globalassets/konferens--och-projektsajter/mistra/rapporter/final-pro-environmental-behaviour-in-sport-and-outdoor-activities-a-literature-review.pdf>

Dickson, T. J., Chapman, J., & Hurrell, M. (2000). Risk In Outdoor Activities: The Perception, The Appeal, The Reality. *Journal of Outdoor and Environmental Education*, 4(2), 10–17. <https://doi.org/10.1007/bf03400717>

Dogs Trust. (2016). Dogs Trust: The big scoop • Ads of the World™ | Part of The Clio Network. Retrieved February 13, 2025, from Ads of the World™ website: <https://www.adsoftheworld.com/campaigns/the-big-scoop>

Dogs Trust. (2017). Walk this way. Retrieved from https://walkthisway.dogstrust.org.uk/wp-content/uploads/2024/07/26781_Walk.This_.Way_.2023.Pack_v2.pdf

Doyle, N. (2020). Leaving No Trace in the Irish Countryside: Effecting Behavioural Change of Recreationists. Munster Technological University. Retrieved from <https://sword.cit.ie/cgi/viewcontent.cgi?article=1797&context=allthe>

du Preez, E. A., & Heath, E. T. (2016). Determining the influence of the social versus physical context on environmentally responsible behaviour among cycling spectators. *Journal of Sport & Tourism*, 20(2), 123–143. <https://doi.org/10.1080/14775085.2016.1227274>

Edwards, V., & Knight, S. (2006). Understanding the Psychology of Walkers with Dogs: new approaches to better management. Retrieved from <https://pure.port.ac.uk/ws/portalfiles/portal/119579/psychology-dgo-walkers.pdf>

Famo Valat. (2025). How a ‘protected nature’ sign keeps roadsides litter-free. Retrieved from <https://www.green-nudges.com/protected-roadside/>

Farmers Guardian. (2024). #FGTaketheLead: Get your FREE signs to remind dog walkers to keep their dogs on leads in the countryside. Retrieved February 13, 2025, from Farmers Guardian website: <https://www.farmersguardian.com:8443/news/4190888/fgtakethelead-free-signs-remind-dog-walkers-dogs-leads-countryside>

Farrow, K., Grolleau, G., & Ibanez, L. (2017). Social Norms and Pro-environmental Behavior: A Review of the Evidence. *Ecological Economics*, 140(2), 1–13. <https://doi.org/10.1016/j.ecolecon.2017.04.017>

Fernández-Llamazares, Á., Fraixedas, S., Brias-Guinart, A., & Terraube, J. (2020). Principles for including conservation messaging in wildlife-based tourism. *People and Nature*, 2(3), 596–607. <https://doi.org/10.1002/pan3.10114>

Filbin, P. (2024). Can New Signs Shame Dog Owners Into Putting Their Pups On A Leash? North Side Alderman Hopes So. Retrieved February 13, 2025, from Block Club Chicago website: https://blockclubchicago.org/2024/08/01/can-new-signs-shame-dog-owners-into-putting-their-pups-on-a-leash-north-side-alderman-hopes-so/?utm_source=chatgpt.com

Get Ireland Active. (2024). Get Ireland Active. Retrieved from Getirelandactive.ie website: <https://www.getirelandactive.ie/?page=Explore-the-Map>

Girasek, D. C. (2019). Evaluating a novel sign’s impact on whether park visitors enter a dangerous river. *Injury Epidemiology*, 6(1). <https://doi.org/10.1186/s40621-019-0222-y>

Goh, E. (2019). Breaking the rules to venture off-trail at national parks: exploring salient beliefs through a planned behaviour approach. *Tourism Recreation Research*, 45(2), 277–283. <https://doi.org/10.1080/02508281.2019.1679526>

- Goh, E. (2020). Walking Off-Trail in National Parks: Monkey See Monkey Do. *Leisure Sciences*, 1–23. <https://doi.org/10.1080/01490400.2020.1755750>
- Goh, E., Ritchie, B., & Wang, J. (2017). Non-compliance in national parks: An extension of the theory of planned behaviour model with pro-environmental values. *Tourism Management*, 59, 123–127. <https://doi.org/10.1016/j.tourman.2016.07.004>
- gov.je. (2015). Proud of you (for picking up my poo) campaign. Retrieved from www.gov.je website: <https://www.gov.je/Environment/AccessCountryside/pages/proudforyouforpickingupmypoo.aspx>
- Government of Ireland. (2022). Embracing Ireland's Outdoors - National Outdoor Recreation Strategy 2023-2027. Retrieved from www.gov.ie website: <https://www.gov.ie/en/policy-information/43eee-embracing-irelands-outdoors-national-outdoor-recreation-strategy-2023-2027/>
- Grant, B. C., Thompson, S. M., & Boyes, M. (1996). Risk and Responsibility: In Outdoor Recreation. *Journal of Physical Education, Recreation & Dance*, 67(7), 34–35. <https://doi.org/10.1080/07303084.1996.10604817>
- Gross, M., & Horta, A. (2016). Dog shit happens: human–canine interactions and the immediacy of excremental presence. *Taylor & Francis EBooks*, 143–160. <https://doi.org/10.4324/9781315595191-17>
- Gstaettner, A. M., Lee, D., & Rodger, K. (2016). The concept of risk in nature-based tourism and recreation – a systematic literature review. *Current Issues in Tourism*, 21(15), 1784–1809. <https://doi.org/10.1080/13683500.2016.1244174>
- Guinness, S. J., Maguire, G. S., Miller, K. K., & Weston, M. A. (2020). My dog, my beach! Attitudes towards dog management on Victorian beaches. *Australasian Journal of Environmental Management*, 27(3), 329–342. <https://doi.org/10.1080/14486563.2020.1760950>
- Haegeli, P., & Pröbstl-Haider, U. (2016). Research on personal risk in outdoor recreation and nature-based tourism. *Journal of Outdoor Recreation and Tourism*, 13, 1–9. <https://doi.org/10.1016/j.jort.2016.02.001>
- Ham, S. H., & Krumpe, E. E. (1996). Identifying Audiences and Messages for Nonformal Environmental Education– a Theoretical Framework for Interpreters. *Journal of Interpretation Research*, 1(1), 11–23. <https://doi.org/10.1177/109258729600100103>
- Hammit, W. E., & Cole, D. N. (1998). *Wildland recreation : ecology and management*. New York: John Wiley & Sons.
- Hanly, J. (2025, February 10). IFA launches “No Dogs Allowed” campaign to tackle sheep attacks. Retrieved February 14, 2025, from Farmersjournal.ie website: <https://www.farmersjournal.ie/news/news/ifa-launches-no-dogs-allowed-campaign-to-tackle-sheep-attacks-855731>
- Hansmann, R., & Steimer, N. (2016). A Field Experiment on Behavioural Effects of Humorous, Environmentally Oriented and Authoritarian Posters against Littering. *Environmental Research, Engineering and Management*, 72(1). <https://doi.org/10.5755/j01.erem.72.1.14169>
- Hobbie, S. E., Finlay, J. C., Janke, B. D., Nidzgorski, D. A., Millet, D. B., & Baker, L. A. (2017). Contrasting nitrogen and phosphorus budgets in urban watersheds and implications for managing urban water pollution. *Proceedings of the National Academy of Sciences*, 114(16), 4177–4182. <https://doi.org/10.1073/pnas.1618536114>

- Hockett, K. S., & Hall, T. E. (2007). The Effect of Moral and Fear Appeals on Park Visitors' Beliefs about Feeding Wildlife. *Journal of Interpretation Research*, 12(1), 5–27. <https://doi.org/10.1177/109258720701200102>
- Høyem, J. (2020). Outdoor recreation and environmentally responsible behavior. *Journal of Outdoor Recreation and Tourism*, 31, 100317. <https://doi.org/10.1016/j.jort.2020.100317>
- Hunziker, M., & Zeidenitz, C. (2006). Outdoor Leisure Activities: Motivation, Attitudes and Strategies Promoting Responsible Behaviour towards Nature and Landscape. 290–292.
- IFA. (2017). IFA Issues Stark Warning to Dog Owners over Savage Sheep Attacks - Irish Farmers' Association. Retrieved February 13, 2025, from Irish Farmers' Association website: <https://www.ifa.ie/farm-sectors/ifa-issues-stark-warning-to-dog-owners-over-savage-sheep-attacks/>
- The Irish Independent. (2025). Dog owners who fail to scoop poop 'notoriously difficult' to police, with just 37 fines issued last year. Retrieved from <https://www.independent.ie/irish-news/dog-owners-who-fail-to-scoop-poop-notoriously-difficult-to-police-with-just-37-fines-issued-last-year/a557151286.html>
- Jing-Han, W., Lin, H.-W., & Liu, W.-Y. (2020). Tourists' Environmental Vandalism and Cognitive Dissonance in a National Forest Park. *Urban Forestry & Urban Greening*, 126845. <https://doi.org/10.1016/j.ufug.2020.126845>
- Johnson, & Vande Kamp. (1996). Extent and Control of Resource Damage Due to Non-Compliant Visitor Behavior: A Case Study from the U.S. National Parks. *Natural Areas Journal*, 16(134-141).
- Keep Britain Tidy. (2013). We're Watching You . Retrieved from <https://www.keepbritaintidy.org/news/we%E2%80%99re-watching-you-using-behavioural-insights-reduce-dog-fouling-46>
- Keep Wales Tidy. (2016). Dog fouling. Retrieved from <https://keepwalestidy.cymru/caru-cymru/wp-content/uploads/sites/3/2021/09/Tackling-Dog-Fouling-min.pdf>
- Kelleher, S. (2024). Kerry farmer offers reward following dog attack on sheep on St Stephen's Day. Retrieved February 13, 2025, from Irish Independent website: <https://www.independent.ie/farming/sheep/kerry-farmer-offers-reward-following-dog-attack-on-sheep-on-st-stephens-day/a352435113.html>
- Keogh, L., Hanlon, A., Kelly, A., Devitt, C., & Messam, L. (2022). Self-reported awareness of the legal status of eight responsibilities of dog owners in Ireland: are dog owners different from non-dog owners? *Irish Veterinary Journal*, 75(1). <https://doi.org/10.1186/s13620-021-00208-z>
- Kopp, V., & Coppes, J. (2020). Why do people leave marked trails? Implications for managing outdoor recreationists. *Eco.mont (Journal on Protected Mountain Areas Research)*, 12(2), 33–40. <https://doi.org/10.1553/eco.mont-12-2s33>
- Kortenkamp, K. V., Moore, C. F., Miller, E. M., & Truell, K. V. (2021). DANGER! NO HIKING! Risky hiking decisions, framing of normative warning messages, and self-exempting beliefs. *Journal of Outdoor Recreation and Tourism*, 35, 100415. <https://doi.org/10.1016/j.jort.2021.100415>
- Larsen, J., & Sankhe, P. (2024). Love This Place Public Attitudes Survey Wave 3.

- Larson, C. L., Reed, S. E., Merenlender, A. M., & Crooks, K. R. (2016). Effects of Recreation on Animals Revealed as Widespread through a Global Systematic Review. *PLOS ONE*, 11(12), e0167259. <https://doi.org/10.1371/journal.pone.0167259>
- Laughery, K. R., & Wogalter, M. S. (2014). A three-stage model summarizes product warning and environmental sign research. *Safety Science*, 61, 3–10. <https://doi.org/10.1016/j.ssci.2011.02.012>
- Leave no trace. (2018). The 7 principles - leave no trace center for outdoor ethics. Retrieved from Leave No Trace website: <https://lnt.org/why/7-principles/>
- Leave No Trace Ireland. (2024). Love This Place Campaign Full Report 2024.
- Leave No Trace Ireland. (n.d.). Outdoor Safety Checklist. Retrieved from <https://www.sportireland.ie/sites/default/files/media/document/2021-01/outdoor-safety-checklist.pdf>
- Leave No Trace Ireland, & THINKHOUSE. (2024). Love This Place, Leave No Trace 2024 Post Campaign Analysis.
- Leijdekkers, S., Marin, Y., Meesters, M., Naser, A.-K., Penninx, M., Van Rookhuijzen, M., & Willems, M. (2015). Effective interventions on littering behaviour of youngsters what are the ingredients? Retrieved from [https://www.wur.nl/upload_mm/9/2/6/4beb526f-d6cc-4ac9-8bee-636a53de7068_Effective%20interventions%20on%20littering%20behaviour%20of%20youngsters%20\(Final%20report%20ACT-group%201530\).pdf](https://www.wur.nl/upload_mm/9/2/6/4beb526f-d6cc-4ac9-8bee-636a53de7068_Effective%20interventions%20on%20littering%20behaviour%20of%20youngsters%20(Final%20report%20ACT-group%201530).pdf)
- Lowe, C. N., Williams, K. S., Jenkinson, S., & Toogood, M. (2014). Environmental and social impacts of domestic dog waste in the UK: investigating barriers to behavioural change in dog walkers. *International Journal of Environment and Waste Management*, 13(4), 331. <https://doi.org/10.1504/ijewm.2014.060452>
- Lynn, N. A., & Brown, R. D. (2003). Effects of recreational use impacts on hiking experiences in natural areas. *Landscape and Urban Planning*, 64(1-2), 77–87. [https://doi.org/10.1016/s0169-2046\(02\)00202-5](https://doi.org/10.1016/s0169-2046(02)00202-5)
- Manning, R. (2003). Emerging Principles for Using Information/Education in Wilderness Management. *International Journal*, 9(1). Retrieved from <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=31ea7182a9524d98cb50b695ac2a8ac2d5fa2b14>
- Marion, J. L., Leung, Y.-F., Eagleston, H., & Burroughs, K. (2016). A Review and Synthesis of Recreation Ecology Research Findings on Visitor Impacts to Wilderness and Protected Natural Areas. *Journal of Forestry*, 114(3), 352–362. <https://doi.org/10.5849/jof.15-498>
- Marion, J. L., & Reid, S. E. (2007). Minimising Visitor Impacts to Protected Areas: The Efficacy of Low Impact Education Programmes. *Journal of Sustainable Tourism*, 15(1), 5–27. <https://doi.org/10.2167/jost593.0>
- McCabe, D. (2022). Louth County Council promotes dog fouling awareness campaign. Retrieved February 13, 2025, from @<https://twitter.com/IrelandLiveNew> website: <https://www.ireland-live.ie/news/louth-live/883648/louth-county-council-promotes-dog-fouling-awareness-campaign.html>
- McCool, S. F., & Cole, D. N. (2022). Communicating minimum impact behavior with trailside bulletin boards: Visitor characteristics associated with effectiveness. In: Cole, David N.; McCool, Stephen F.; Borrie, William T.; O'Loughlin, Jennifer, Comps. 2000. *Wilderness Science in a Time of Change Conference--Volume 4: Wilderness Visitors, Experiences, and Visitor Management*; 1999 May 23–27; Missoula, MT. Proceedings

RMRS-P-15-VOL-4. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. P. 208-216, 015. Retrieved from <https://research.fs.usda.gov/treesearch/22027>

Meijer, W. (2021). How Dogs can Pollute our Rivers and Seas - UCD Expertise. Retrieved February 13, 2025, from Expertise.ucd.ie website: <https://expertise.ucd.ie/how-dogs-can-pollute-our-rivers-and-seas/>

Michael, H., Sam, H., & Terrence, B. (2011). Influencing park visitor behavior: A belief-based approach. *Journal of Park & Recreation Administration*, 27(1).

Michie, S., van Stralen, M. M., & West, R. (2011). The Behaviour Change wheel: a New Method for Characterising and Designing Behaviour Change Interventions. *Implementation Science*, 6(42). <https://doi.org/10.1186/1748-5908-6-42>

Miller, S. G., Knight, R. L., & Miller, C. K. (2001). Wildlife Responses to Pedestrians and Dogs. *Wildlife Society Bulletin (1973-2006)*, 29(1), 124–132. Retrieved from <https://www.jstor.org/stable/3783988>

More, S. J., Collins, D. M., Meunier, N. V., Messam, L. L. McV., Doyle, R., Maguire, A., ... Lawler, C. (2022). Understanding the dog population in the Republic of Ireland: insight from existing data sources? *Irish Veterinary Journal*, 75(1). <https://doi.org/10.1186/s13620-022-00223-8>

National Park Service. (2019). Stay on designated trails and leave no trace. Retrieved February 13, 2025, from Nps.gov website: <https://www.nps.gov/media/photo/view.htm?id=3AD02128-86C8-4E10-957F-B2DAE41A54A9>

NetworkRail. (2015). Keep your dog on a lead or you're on dangerous ground, urges new level crossing campaign. Retrieved February 13, 2025, from Network Rail Media Centre website: <https://www.networkrailmediacentre.co.uk/news/keep-your-dog-on-a-lead-or-youre-on-dangerous-ground-urges-new-level-crossing-campaign-4>

Osborne-Sherlock, E. (2024). 78% of rural crime teams notice increase in dog attacks on sheep - survey - Agriland.co.uk. Retrieved February 13, 2025, from Agriland.co.uk website: <https://www.agriland.co.uk/farming-news/78-of-rural-crime-teams-notice-increase-in-dog-attacks-on-sheep-survey/>

Pang, B., David, P., Seydel, T., Rundle-Thiele, S., & Dexter, C. (2021). Coexisting: The Role of Communications in Improving Attitudes towards Wildlife. *Productivity Press EBooks*, 755–764. <https://doi.org/10.4324/9781003188186-29>

Park, E., & Park, H. J. (2019). Preferred visual images, environmental attitudes, and environmentally responsible behavioural intention among outdoor recreationists. *International Journal of Tourism Sciences*, 1–21. <https://doi.org/10.1080/15980634.2019.1666202>

Park, L. O., Marion, J. L., & Wimpey, J. F. (2022). Efficacy of Combining Education and Site Management in Reducing Off-Trail Travel in a Fragile Biotic Community, Acadia National Park. *Journal of Interpretation Research*, 109258722211337. <https://doi.org/10.1177/10925872221133774>

Park, Manning, Marion, Lawson, & Jacobi. (2008). Managing Visitor Impacts in Parks: A Multi-Method Study of the Effectiveness of Alternative Management Practices. *Journal of Park and Recreation Administration*. Retrieved from https://d1wqtxts1xzle7.cloudfront.net/71802720/Managing_Visitor_Impacts_in_Parks_A_Mult20211007-13778-lpobjz.pdf?1738435830=&response-content-disposition=inline%3B+filename%3DManaging_visitor_impacts_in_parks_A_mult.pdf&Expires=1739481380&S

ignature=FQIUzSH6dIR0O9DaZ~LLV4ZtQTs~TKbDboWsVcfXcssfWlzO6lpPhNk7D51rbLYmKzww9NEp3RMO
kvKa3rifjwZ2x9~y-sYQ6JEbO8f6zC4IKDP-
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r24J0PdOM6qRHsSU4rpye9opssWwDNG-l8tgV8exITImiMMJgGD~0VqnW7zpv9rrgXVR-VyjtXe-
r9RjSOK6neLFvQ4uZtAw3RdPXg__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

Portman, M. E., & Behar, D. (2020). Influencing beach littering behaviors through infrastructure design: An in situ experimentation case study. *Marine Pollution Bulletin*, 156, 111277. <https://doi.org/10.1016/j.marpolbul.2020.111277>

RTE News. (2024). Just 46 dog fouling fines issued last year. RTE.ie. Retrieved from <https://www.rte.ie/news/ireland/2024/0821/1465971-dog-fines/>

Saunders, R., Weiler, B., Scherrer, P., & Zeppel, H. (2019). Best practice principles for communicating safety messages in national parks. *Journal of Outdoor Recreation and Tourism*, 25, 132–142. <https://doi.org/10.1016/j.jort.2018.01.006>

Schwartz, F., Taff, B. D., Lawhon, B., & VanderWoude, D. (2018). Mitigating Undesignated Trail Use: The Efficacy of Messaging and Direct Site Management Actions in an Urban-Proximate Open Space Context. *Environmental Management*, 62(3), 458–473. <https://doi.org/10.1007/s00267-018-1054-1>

Scottish Outdoor Access Code. (n.d.). Being a responsible dog owner. Retrieved February 13, 2025, from Scottish Outdoor Access Code website: <https://www.outdooraccess-scotland.scot/practical-guide-all/dog-walkers>

Scruggs, C. E., Lozoya, S., Rumsey, K. N., Bronson, K., & Chavez, P. (2021). Voluntary Public Campaigns to Benefit the Environment: Assessing the Effectiveness of the There Is No Poop Fairy Campaign. *Journal of Planning Education and Research*, 0739456X2110203. <https://doi.org/10.1177/0739456x211020357>

Sinnott, A. (2017). Up to 4,000 sheep killed and injured in dog attacks annually – IFA. Retrieved February 13, 2025, from Farmersjournal.ie website: <https://www.farmersjournal.ie/news/news/up-to-4-000-sheep-killed-and-injured-in-dog-attacks-annually-ifa-285124>

SIRC. (2008). Assessment of Perceptions, Behaviours and Understanding of Walkers with Dogs in the Countryside Prepared for: The Kennel Club & Hampshire County Council. EXECUTIVE SUMMARY Research Context. Retrieved from <http://www3.hants.gov.uk/shu-research-paper.pdf>

Sport Ireland. (2025). Trail Advice & Guidance. Retrieved February 14, 2025, from Sport Ireland website: <https://www.sportireland.ie/outdoors/trail-advice-guidance>

Tablado, Z., & Jenni, L. (2015). Determinants of uncertainty in wildlife responses to human disturbance. *Biological Reviews*, 92(1), 216–233. <https://doi.org/10.1111/brv.12224>

Taylor, A. R., & Knight, R. L. (2003). Wildlife Responses to Recreation and Associated Visitor Perceptions. *Ecological Applications*, 13(4), 951–963. JSTOR. <https://doi.org/10.2307/4134735>

The Drum. (2010, December 13). Keep Britain Tidy's Dog Poo Fairy campaign hailed a success. Retrieved February 13, 2025, from The Drum website: <https://www.thedrum.com/news/2010/12/13/keep-britain-tidys-dog-poo-fairy-campaign-hailed-success>

- Typhina, E., & Yan, C. (2014). Managing Dog Waste: Campaign Insights From the Health Belief Model. *Applied Environmental Education & Communication*, 13(2), 73–82. <https://doi.org/10.1080/1533015x.2014.944247>
- van Eeden, L. M., Geschke, A., Hames, F., Squires, Z. E., & Weston, M. A. (2022). The leashing behavior of dog owners in different types of natural areas. *Human Dimensions of Wildlife*, 1–16. <https://doi.org/10.1080/10871209.2022.2077482>
- Visitor Safety Group. (2019). Introduction to Principles. Retrieved from <https://www.visitorsafety.group/principles/guiding-principles/>
- Webb, D., Kolodko, J., Read, D., Ager, J., & Lawrence, T. (2018). Understanding, addressing and solving the problem of litter . Retrieved from [https://www.keepbritaintidy.org/sites/default/files/resource/15913_Journal%20of%20Litter%20and%20Environmental%20Quality_v7-online%20\(1\).pdf](https://www.keepbritaintidy.org/sites/default/files/resource/15913_Journal%20of%20Litter%20and%20Environmental%20Quality_v7-online%20(1).pdf)
- Webley, P., & Siviter, C. (2000). Why Do Some Owners Allow Their Dogs to Foul the Pavement? The Social Psychology of a Minor Rule Infraction1. *Journal of Applied Social Psychology*, 30(7), 1371–1380. <https://doi.org/10.1111/j.1559-1816.2000.tb02525.x>
- Wells, D. L. (2006). Factors Influencing Owners' Reactions to Their Dogs' Fouling. *Environment and Behavior*, 38(5), 707–714. <https://doi.org/10.1177/0013916505284794>
- Williams, K. J. H., Weston, M. A., Henry, S., & Maguire, G. S. (2009). Birds and Beaches, Dogs and Leashes: Dog Owners' Sense of Obligation to Leash Dogs on Beaches in Victoria, Australia. *Human Dimensions of Wildlife*, 14(2), 89–101. <https://doi.org/10.1080/10871200802649799>
- Winter, P. L. (2006). The Impact of Normative Message Types on Off-Trail Hiking. *Journal of Interpretation Research*, 11(1), 35–52. <https://doi.org/10.1177/109258720601100103>
- Winter, P. L., Cialdini, R. B., Bator, R. J., Rhoads, K., & Sagarin, B. J. (1998). An Analysis of Normative Messages in Signs at Recreation Settings. *Journal of Interpretation Research*, 3(1), 39–47. <https://doi.org/10.1177/109258729800300103>
- Zuckerman, M. (1994). Behavioral expressions and biosocial bases of sensation seeking (p. 27). Cambridge: Cambridge University Press.

Appendices

Appendix 1. Membership of Comhairle na Tuaithe

Beara Breifne Committee

Canoeing Ireland (Rotating member)

Cara (Rotating member)

Coillte

Cycling Ireland

Department of Rural and Community Development

Department Of Transport

Fáilte Ireland

Horse Sport Ireland (Rotating member)

Ireland's Association for Adventure Tourism

Irish Local Development Network

Keep Ireland Open

Leave No Trace Ireland

Mountaineering Ireland

Sport Ireland

The County & City Management Association

The Heritage Council

The Irish Cattle & Sheep Farmers' Association

The Irish Farmers' Association

The Irish Uplands Forum

The National Parks And Wildlife Service

Waterways Ireland (WI)